

## Hit List

First Hit

### Search Results - Record(s) 1 through 16 of 16 returned.

☐ 1. Document ID: US 20050248341 A1

L51: Entry 1 of 16

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 2. Document ID: US 20050167100 A1.

L51: Entry 2 of 16

File: PGPB

Aug 4, 2005

PGPUB-DOCUMENT-NUMBER: 20050167100

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050167100 A1

TITLE: Method of eliminating conductive drill parasitic influence on the measurements of transient electromagnetic components in MWD tools

PUBLICATION-DATE: August 4, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Itskovich, Gregory B.	Houston	TX	US

US-CL-CURRENT: 166/248; 166/65.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. De
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☐ 3. Document ID: US 20050127909 A1

L51: Entry 3 of 16

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050127909

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050127909 A1

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

PUBLICATION-DATE: June 16, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Isernhagen		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. De
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☐ 4. Document ID: US 20030038631 A1

L51: Entry 4 of 16

File: PGPB

Feb 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030038631

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030038631 A1

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

PUBLICATION-DATE: February 27, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Isernhagen		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. De
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☐ 5. Document ID: US 20020125885 A1

L51: Entry 5 of 16

File: PGPB

Sep 12, 2002

PGPUB-DOCUMENT-NUMBER: 20020125885  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020125885 A1

TITLE: Side-looking NMR probe for oil well logging

PUBLICATION-DATE: September 12, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Reiderman, Arcady	Houston	TX	US
Beard, David R.	Houston	TX	US

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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☐ 6. Document ID: US 7150316 B2

L51: Entry 6 of 16

File: USPT

Dec 19, 2006

US-PAT-NO: 7150316  
DOCUMENT-IDENTIFIER: US 7150316 B2

TITLE: Method of eliminating conductive drill parasitic influence on the measurements of transient electromagnetic components in MWD tools

DATE-ISSUED: December 19, 2006

## PRIOR-PUBLICATION:

DOC-ID	DATE
US 20050167100 A1	August 4, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Itskovich; Gregory B.	Houston	TX		US

US-CL-CURRENT: 166/248; 166/65.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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☐ 7. Document ID: US 7084625 B2

L51: Entry 7 of 16

File: USPT

Aug 1, 2006

US-PAT-NO: 7084625

DOCUMENT-IDENTIFIER: US 7084625 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: August 1, 2006

## PRIOR-PUBLICATION:

DOC-ID

DATE

US 20050127909 A1

June 16, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		US
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. De
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☐ 8. Document ID: US 6844727 B2

L51: Entry 8 of 16

File: USPT

Jan 18, 2005

US-PAT-NO: 6844727

DOCUMENT-IDENTIFIER: US 6844727 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: January 18, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303; 324/338, 343/788

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. De
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☐ 9. Document ID: US 6583621 B2

L51: Entry 9 of 16

File: USPT

Jun 24, 2003



US-PAT-NO: 6583621

DOCUMENT-IDENTIFIER: US 6583621 B2

TITLE: Method and apparatus for nuclear magnetic resonance measuring while drilling

DATE-ISSUED: June 24, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Prammer; Manfred G.	Downingtown	PA		
Dudley; James H.	Downingtown	PA		
Masak; Peter	West Chester	PA		
Goodman; George D.	Phoenixville	PA		
Morys; Marian	Downingtown	PA		
Jones; Dale A.	Houston	TX		
Bartel; Roger P.	Houston	TX		
Chen; Chen-Kang David	Houston	TX		
Larronde; Michael L.	Houston	TX		
Rodney; Paul F.	Spring	TX		
Smaardyk; John E.	Houston	TX		

US-CL-CURRENT: 324/303; 324/300

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMIC	Draw De
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☐ 10. Document ID: US 6580273 B2

L51: Entry 10 of 16

File: USPT

Jun 17, 2003

US-PAT-NO: 6580273

DOCUMENT-IDENTIFIER: US 6580273 B2

TITLE: Side-looking NMR probe for oil well logging

DATE-ISSUED: June 17, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/300

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMIC	Draw De
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☐ 11. Document ID: US 6575535 B2

L51: Entry 11 of 16

File: USPT

Jun 10, 2003

US-PAT-NO: 6575535

DOCUMENT-IDENTIFIER: US 6575535 B2

TITLE: Method and apparatus for wheel spindles and the like with improved LRO

DATE-ISSUED: June 10, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meeker; Steven Eugene	Norwalk	OH		
Scheufler, Jr.; Richard Allen	Collins	OH		
Zuck; Christopher J.	Sandusky	OH		
Beverick; John R.	Sandusky	OH		

US-CL-CURRENT: 301/35.621; 29/894.36, 301/35.626

Full	Title	Citation	Front	Review	Classification	Date	Reference	301/35.621	29/894.36	301/35.626	Claims	KMC	Draw. De
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☐ 12. Document ID: US 6452388 B1

L51: Entry 12 of 16

File: USPT

Sep 17, 2002

US-PAT-NO: 6452388

DOCUMENT-IDENTIFIER: US 6452388 B1

TITLE: Method and apparatus of using soft non-ferritic magnetic material in a nuclear magnetic resonance probe

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/309, 324/318, 324/322

Full	Title	Citation	Front	Review	Classification	Date	Reference	324/303	324/309	324/318	324/322	Claims	KMC	Draw. De
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☐ 13. Document ID: US 6348792 B1

L51: Entry 13 of 16

File: USPT

Feb 19, 2002

US-PAT-NO: 6348792

DOCUMENT-IDENTIFIER: US 6348792 B1

TITLE: Side-looking NMR probe for oil well logging

DATE-ISSUED: February 19, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beard; David	Houston	TX		
Reiderman; Arcady	Houston	TX		

US-CL-CURRENT: 324/303; 324/300, 324/307

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw D
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☐ 14. Document ID: US 3811856 A

L51: Entry 14 of 16

File: USPT

May 21, 1974

US-PAT-NO: 3811856

DOCUMENT-IDENTIFIER: US 3811856 A

TITLE: METHOD FOR MOLDING AN AIR BEARING MAGNETIC HEAD WITH A GLASS SLIDER BODY

DATE-ISSUED: May 21, 1974

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ruszczyk; James F.	San Jose	CA		
Secrist; Duane R.	San Jose	CA		

US-CL-CURRENT: 65/48; 29/603.06, 29/603.12, 360/234.7, 65/155, 65/49, 65/59.3

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw D
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☐ 15. Document ID: US 3678211 A

L51: Entry 15 of 16

File: USPT

Jul 18, 1972

US-PAT-NO: 3678211

DOCUMENT-IDENTIFIER: US 3678211 A

TITLE: AIR BEARING MAGNETIC HEAD WITH GLASS SLIDER BODY

DATE-ISSUED: July 18, 1972

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hoogendorn; Helen M.	Poughkeepsie	NY		
Narken; Bernt	Poughkeepsie	NY		
Roeder; Paul J.	Carmel	IN		
Sunners; Brian	Poughkeepsie	NY		

US-CL-CURRENT: 360/235.3; 29/603.06, 360/234.7, 65/48, 65/49

Full	Title	Citation	Front	Review	Classification	Date	Reference	Search	Algorithms	Claims	KMIC	Draw De
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☐ 16. Document ID: US 3670112 A

L51: Entry 16 of 16

File: USPT

Jun 13, 1972

US-PAT-NO: 3670112

DOCUMENT-IDENTIFIER: US 3670112 A

TITLE: AIR BEARING MAGNETIC HEAD WITH GLASS SLIDER BODY

DATE-ISSUED: June 13, 1972

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ruszczyk; James F.	San Jose	CA		
Secrist; Duane R.	San Jose	CA		

US-CL-CURRENT: 360/235.3; 249/91, 360/119, 360/234.7, 65/48, 65/49

Full	Title	Citation	Front	Review	Classification	Date	Reference	Search	Algorithms	Claims	KMIC	Draw De
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Term	Documents
NONFERRITE	18
NONFERRITES	0
NON-FERRITE	144
NON-FERRITES	5
NONFERRITIC\$4	0
NONFERRITIC	13
NON-FERRITIC\$4	0
NON-FERRITIC	96
((NONFERRITE OR NONFERRITIC\$4 OR NON-FERRITE OR NON-FERRITIC\$4) AND 45).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	16
(L45 AND (NONFERRITE OR NONFERRITIC\$4 OR NON-FERRITE OR NON-FERRITIC\$4) ).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	16

Display Format:  Change Format

## WEST Search History

DATE: Friday, February 16, 2007

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L62	L61 and (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same (nonferrite or nonferritic\$4 or non-ferrite or non-ferritic\$4) same (powder\$5 or grain) same (saturat\$4 with flux with density))	3
<input type="checkbox"/>	L61	L60 and ((antenna or coil or probe or winding or ring or anulus or loop) same (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce))))	9
<input type="checkbox"/>	L60	L59 and (rf or "radio frequency" or radio-frequency or radiofrequency)	9
<input type="checkbox"/>	L59	L58 and (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce)))	10
<input type="checkbox"/>	L58	L57 and (((earth or land or surface) with (formation or mountain or valley or desert or canyon)) same (wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or well))	1930
<input type="checkbox"/>	L57	(324/300-377.ccls.)	15595
<input type="checkbox"/>	L56	L55 and (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same (nonferrite or nonferritic\$4 or non-ferrite or non-ferritic\$4) same (powder\$5 or grain) same (saturat\$4 with flux with density))	3
<input type="checkbox"/>	L55	L54 and (powder\$5 or grain)	9
<input type="checkbox"/>	L54	L53 and ((magnetic or magnetically) with (permeable or permeability))	9
<input type="checkbox"/>	L53	L52 and (permeable or permeability)	9
<input type="checkbox"/>	L52	L51 and (saturat\$4 with flux with density)	9
<input type="checkbox"/>	L51	L45 and (nonferrite or nonferritic\$4 or non-ferrite or non-ferritic\$4)	16
<input type="checkbox"/>	L50	L49 and (rf or "radio frequency" or radio-frequency or radiofrequency)	2
<input type="checkbox"/>	L49	L48 and (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce)))	4
<input type="checkbox"/>	L48	L47 and ((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce))	19
<input type="checkbox"/>	L47	L46 and ((resistive or resistivity) same (property or parameters or component or aspect) same (formation or earth or wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or logging or lwd or mwd or lwt or mwt))	2468

<input type="checkbox"/>	L46	L45 and (resistive or resistivity)	7600
<input type="checkbox"/>	L45	(((earth or land or surface) with (formation or mountain or valley or desert or canyon)) same (wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or well))	67277
<input type="checkbox"/>	L44	L43 and (((earth or land or surface) with (formation or mountain or valley or desert or canyon)) same (wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or well))	2
<input type="checkbox"/>	L43	L42 and ((antenna or coil or probe or winding or ring or anulus or loop) same (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce))))	16
<input type="checkbox"/>	L42	L41 and (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce))))	16
<input type="checkbox"/>	L41	L38 and ((electric or electrical or electricity or electrically or eletromagnetic\$4 or electro-magnetic\$4) same (property or parameter or component or aspect) same (formation or earth or wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or logging or lwd or mwd or lwt or mwt))	63
<input type="checkbox"/>	L40	L39 and (((magnet or magnetic or magnetically) same (core or cored or corable or coring)) same((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce))))	16
<input type="checkbox"/>	L39	L38 and ((electric or electrical or electricity or electrically or eletromagnetic\$4 or electro-magnetic\$4) same (property or parameters or component or aspect) same (formation or earth or wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or logging or lwd or mwd or lwt or mwt))	63
<input type="checkbox"/>	L38	L37 and ((electric or electrical or electricity or electrically or eletromagnetic\$4 or electro-magnetic\$4) same (property or parameters or component or aspect))	104
<input type="checkbox"/>	L37	L36 and (rf or "radio frequency" or radio-frequency or radiofrequency)	139
<input type="checkbox"/>	L36	L35 and (formation or earth or wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or logging or lwd or mwd or lwt or mwt)	422
<input type="checkbox"/>	L35	L34 and ((magnet or magnetic or magnetically) same (core or cored or corable or coring))	966
<input type="checkbox"/>	L34	L33 and ((core or cored or corable or coring) same (antenna or coil or probe or winding or ring or anulus or loop))	1093
<input type="checkbox"/>	L33	L32 and (antenna or coil or probe or winding or ring or anulus or loop)	1332
<input type="checkbox"/>	L32	L31 and (core or cored or corable or coring)	1665
<input type="checkbox"/>	L31	L30 and ((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4 or low or lower or lowering or reduced or reducing or reduce))	3534
<input type="checkbox"/>	L30	((amorphous with metal) or metglas or laminate or ribbon or kapton or (polyimide with film) or (soft or ferrite or ferritic or core or powder\$4 or ferous or ferite or ferrous or iron or FE or "SmCo" or cobalt or cobault or samarium or sumariam))	4510625

<input type="checkbox"/>	L29	L20 and ((magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5) with (dampening or damp\$4 or cancel\$7 or null\$4 or insulat\$4))	11
<input type="checkbox"/>	L28	L20 and (hysteresis)	44
<input type="checkbox"/>	L27	L20 and (powder\$5 or grain or particle or particulate)	53
<input type="checkbox"/>	L26	L20 and (nonferrite or nonferritic\$4 or non-ferrite or non-ferritic\$4)	5
		<i>DB=PGPB,USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L25	L24 and (cor\$4)	4
<input type="checkbox"/>	L24	L23 and (powder\$5 or grain)	6
<input type="checkbox"/>	L23	6069479	11
<input type="checkbox"/>	L22	L21 and (powder\$5 or grain)	11
<input type="checkbox"/>	L21	6215304	29
		<i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L20	L19 and (magnetostrictive or magnetostriction or magneto-restrict\$5 or magnetorestrict\$5)	58
<input type="checkbox"/>	L19	L18 and (antenna or coil or probe and size or loop or wavelength or hysteresis or wave-length or "wave length" or grain)	4609
<input type="checkbox"/>	L18	L17 and (soft or ferrite or ferritic or core or powder\$4 or ferous or ferite or ferrous or iron or FE or "SmCo" or cobalt or cobault or samarium or sumariam)	7783
<input type="checkbox"/>	L17	L13 and (ring\$4 or damp\$4 or acoustic\$6 or sound or cancel\$7 or null\$4 and insulat\$8)	8843
<input type="checkbox"/>	L16	L15 and (antenna or coil or probe and size or loop or wavelength or hysteresis or wave-length or "wave length" or grain)	4571
<input type="checkbox"/>	L15	L14 and (soft or ferrite or ferritic or core or powder\$4 or ferous or ferite or ferrous or iron or FE or "SmCo" or cobalt or cobault or samarium or sumariam)	7725
<input type="checkbox"/>	L14	L13 and (ring\$4 or damp\$4 or acoustic\$6 or sound or cancel\$7 or null\$4 and insulat\$8)	8768
<input type="checkbox"/>	L13	L12 and (formation or earth or wellbore or well-bore or "well bore" or "bore hole" or borehole or bore-hole or logging or lwd or mwd or lwt or mwt)	12068
<input type="checkbox"/>	L12	L11 and ((magnetic adj resonance) or MRI or NMR)	16382
<input type="checkbox"/>	L11	((amorphous with (material or metal)) or metglas or laminate or ribbon or kapton or (polyimide with film) or fluxtrol)	629710
<input type="checkbox"/>	L10	((amorphous with (material or metal)) or metglas or laminate or ribbon or kapton or (polyimide with film))	629681
<input type="checkbox"/>	L9	L5 not L6	16
<input type="checkbox"/>	L8	L7 and (antenna or coil or probe and size or loop or wavelength or wave-length or "wave length")	42
<input type="checkbox"/>	L7	L6 and (soft or ferrite or ferritic or core or powder\$4 or ferous or ferrous or iron or FE or fluxtrol or "SmCo" or cobalt or cobault or samarium or sumariam)	44
<input type="checkbox"/>	L6	L5 and (ring\$4 or damp\$4 or acoustic\$6 or sound or cancel\$7 or null\$4 and insulat\$8)	46
<input type="checkbox"/>	L5	L4 and (formation or earth or wellbore or well-bore or "well bore" or "bore	62

hole" or borehole or bore-hole or logging or lwd or mwd or lwt or mwt)

┐	L4	L3 and ((magnetic adj resonance) or MRI or NMR)	87
┐	L3	L2 and (magnetostrictive or magnetostriction)	2226
┐	L2	((amorphous with metal) or metglas or laminate or ribbon or kapton or (polyimide with film))	568010
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>			
┐	L1	6452388	24

END OF SEARCH HISTORY



## Hit List

[First Hit](#)[Clear](#)[Generate Collection](#)[Print](#)[Fwd Refs](#)[Bkwd Refs](#)[Generate OACS](#)

**Search Results** - Record(s) 1 through 16 of 16 returned.

☐ 1. Document ID: US 20070010702 A1

L43: Entry 1 of 16

File: PGPB

Jan 11, 2007

PGPUB-DOCUMENT-NUMBER: 20070010702

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20070010702 A1

TITLE: Medical device with low magnetic susceptibility

PUBLICATION-DATE: January 11, 2007

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Wang; Xingwu	Wellsville	NY	US
Greenwald; Howard J.	Rochester	NY	US

US-CL-CURRENT: [600/8](#); [424/422](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. D
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☐ 2. Document ID: US 20050248341 A1

L43: Entry 2 of 16

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: [324/303](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw D
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3. Document ID: US 20050107870 A1

L43: Entry 3 of 16

File: PGPB

May 19, 2005

PGPUB-DOCUMENT-NUMBER: 20050107870  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20050107870 A1

TITLE: Medical device with multiple coating layers

PUBLICATION-DATE: May 19, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Wang, Xingwu	Wellsville	NY	US
Greenwald, Howard J.	Rochester	NY	US

US-CL-CURRENT: 623/1.44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw D
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4. Document ID: US 20050079132 A1

L43: Entry 4 of 16

File: PGPB

Apr 14, 2005

PGPUB-DOCUMENT-NUMBER: 20050079132  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20050079132 A1

TITLE: Medical device with low magnetic susceptibility

PUBLICATION-DATE: April 14, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Wang, Xingwu	Wellsville	NY	US
Greenwald, Howard J.	Rochester	NY	US
Gunderman, Robert D.	Honeyoye Falls	NY	US

US-CL-CURRENT: 424/1.11; 424/422, 424/423, 600/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw D
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5. Document ID: US 20050025797 A1

L43: Entry 5 of 16

File: PGPB

Feb 3, 2005

PGPUB-DOCUMENT-NUMBER: 20050025797  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20050025797 A1

TITLE: Medical device with low magnetic susceptibility

PUBLICATION-DATE: February 3, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Wang, Xingwu	Wellsville	NY	US
Greenwald, Howard Jay	Rochester	NY	US

US-CL-CURRENT: 424/422; 424/423, 424/489

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Drawn De
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☐ 6. Document ID: US 20040254419 A1

L43: Entry 6 of 16

File: PGPB

Dec 16, 2004

PGPUB-DOCUMENT-NUMBER: 20040254419  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20040254419 A1

TITLE: Therapeutic assembly

PUBLICATION-DATE: December 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Wang, Xingwu	Wellsville	NY	US
Greenwald, Howard J.	Rochester	NY	US
Lanzafame, John	Victor	NY	US
Weiner, Michael L.	Webster	NY	US
Connelly, Patrick R.	Rochester	NY	US

US-CL-CURRENT: 600/8; 424/1.11, 424/422

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Drawn De
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☐ 7. Document ID: US 20040212269 A1

L43: Entry 7 of 16

File: PGPB

Oct 28, 2004

PGPUB-DOCUMENT-NUMBER: 20040212269  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20040212269 A1

TITLE: Selective etching process for cutting amorphous metal shapes and components made thereof

PUBLICATION-DATE: October 28, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Decristofaro, Nicholas J.	Chatham	NJ	US
Fish, Gordon E.	Montclair	NJ	US
Lindquist, Scott M.	Myrtle Beach	SC	US
Kroger, Carl E.	Aynor	SC	US

US-CL-CURRENT: 310/216

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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8. Document ID: US 20040150285 A1

L43: Entry 8 of 16

File: PGPB

Aug 5, 2004

PGPUB-DOCUMENT-NUMBER: 20040150285

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040150285 A1

TITLE: Low core loss amorphous metal magnetic components for electric motors

PUBLICATION-DATE: August 5, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Decristofaro, Nicholas J.	Chatham	NJ	US
Fish, Gordon E.	Montclair	NJ	US
Lindquist, Scott M.	Myrtle Beach	SC	US
Kroger, Carl E.	Aynor	SC	US

US-CL-CURRENT: 310/216; 428/611, 428/900

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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9. Document ID: US 20040046470 A1

L43: Entry 9 of 16

File: PGPB

Mar 11, 2004

PGPUB-DOCUMENT-NUMBER: 20040046470

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040046470 A1

TITLE: Method of constructing a unitary amorphous metal component for an electric machine

PUBLICATION-DATE: March 11, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Decristofaro, Nicholas J.	Chatham	NJ	US
Lindquist, Scott M.	Myrtle Beach	SC	US
Renduchintala, Sastry S.	Myrtle Beach	SC	US
Kroger, Carl E.	Aynor	SC	US

US-CL-CURRENT: 310/156.32; 156/185, 156/268, 428/592

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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☐ 10. Document ID: US 20030111926 A1

L43: Entry 10 of 16

File: PGPB

Jun 19, 2003

PGPUB-DOCUMENT-NUMBER: 20030111926

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030111926 A1

TITLE: Unitary amorphous metal component for an electric machine

PUBLICATION-DATE: June 19, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Decristofaro, Nicholas J.	Chatham	NJ	US
Lindquist, Scott M.	Myrtle Beach	SC	US
Renduchintala, Sastry S.	Myrtle Beach	SC	US
Kroger, Carl E.	Aynor	SC	US

US-CL-CURRENT: 310/216

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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☐ 11. Document ID: US 20020158540 A1

L43: Entry 11 of 16

File: PGPB

Oct 31, 2002

PGPUB-DOCUMENT-NUMBER: 20020158540

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020158540 A1

TITLE: Laminated amorphous metal component for an electric machine

PUBLICATION-DATE: October 31, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
------	------	-------	---------

Lindquist, Scott M.	Horry	SC	US
Fish, Gordon E.	Montclair	NJ	US
DeCristofaro, Nicholas J.	Morris	NJ	US
Stamatis, Peter J.	Morristown	NJ	US

US-CL-CURRENT: 310/216

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 12. Document ID: US 7144468 B2

L43: Entry 12 of 16

File: USPT

Dec 5, 2006

US-PAT-NO: 7144468

DOCUMENT-IDENTIFIER: US 7144468 B2

TITLE: Method of constructing a unitary amorphous metal component for an electric machine

DATE-ISSUED: December 5, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20040046470 A1

March 11, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Decristofaro; Nicholas J.	Chatham	NJ		US
Lindquist; Scott M.	Myrtle Beach	SC		US
Renduchintala; Sastry S.	Myrtle Beach	SC		US
Kroger; Carl E.	Aynor	SC		US

US-CL-CURRENT: 156/185; 156/191, 156/193, 310/45, 310/46

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 13. Document ID: US 6803694 B2

L43: Entry 13 of 16

File: USPT

Oct 12, 2004

US-PAT-NO: 6803694

DOCUMENT-IDENTIFIER: US 6803694 B2

TITLE: Unitary amorphous metal component for an axial flux electric machine

DATE-ISSUED: October 12, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
------	------	-------	----------	---------

Decristofaro; Nicholas J.	Chatham	NJ
Lindquist; Scott M.	Myrtle Beach	SC
Renduchintala; Sastry S.	Myrtle Beach	SC
Kroger; Carl E.	Aynor	SC

US-CL-CURRENT: 310/216; 310/156.32, 310/268

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KVMC	Draw. D
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☐ 14. Document ID: US 6784588 B2

L43: Entry 14 of 16

File: USPT

Aug 31, 2004

US-PAT-NO: 6784588

DOCUMENT-IDENTIFIER: US 6784588 B2

TITLE: Low core loss amorphous metal magnetic components for electric motors

DATE-ISSUED: August 31, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeCristofaro; Nicholas J.	Chatham	NJ		
Fish; Gordon E.	Montclair	NJ		
Lindquist; Scott M.	Myrtle Beach	SC		
Kroger; Carl E.	Aynor	SC		

US-CL-CURRENT: 310/216

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KVMC	Draw. D
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☐ 15. Document ID: US 6737784 B2

L43: Entry 15 of 16

File: USPT

May 18, 2004

US-PAT-NO: 6737784

DOCUMENT-IDENTIFIER: US 6737784 B2

TITLE: Laminated amorphous metal component for an electric machine

DATE-ISSUED: May 18, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lindquist; Scott M.	Myrtle Beach	SC	29579	
Fish; Gordon E.	Montclair	NJ	07043	
DeCristofaro; Nicholas J.	Chatham	NJ	07928	
Stamatis; Peter J.	Morristown	NJ	07960	

US-CL-CURRENT: [310/216](#); [310/251](#), [310/254](#), [310/261](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw D
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16. Document ID: US 20050248341 A1

L43: Entry 16 of 16

File: DWPI

Nov 10, 2005

DERWENT-ACC-NO: 2005-784158

DERWENT-WEEK: 200580

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TITLE: Electrical properties evaluation apparatus for earth formation surrounding borehole, includes antenna assemblies having magnetic core formed from material having high internal magnetostrictive damping, or low magnetostriction

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw D
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Term	Documents
ANTENNA	397782
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COIL	1326024
COILS	439974
PROBE	397662
PROBES	186685
WINDING	729911
WINDINGS	246991
RING	2511955
RINGS	705080
(L42 AND ((ANTENNA OR COIL OR PROBE OR WINDING OR RING OR ANULUS OR LOOP) SAME (((MAGNET OR MAGNETIC OR MAGNETICALLY) SAME (CORE OR CORED OR CORABLE OR CORING)) SAME ((MAGNETOSTRICTIVE OR MAGNETOSTRICTION OR MAGNETO-RESTRICT\$5 OR MAGNETORESTRICT\$5) WITH (DAMPENING OR DAMP\$4 OR CANCEL\$7 OR NULL\$4 OR INSULAT\$4 OR LOW OR LOWER OR LOWERING OR REDUCED OR REDUCING OR REDUCE))))).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	16

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☐ 1. Document ID: US 20050248341 A1

L44: Entry 1 of 2

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: 324/303

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">KMC</a>	<a href="#">Draw D</a>
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☐ 2. Document ID: US 20050248341 A1

L44: Entry 2 of 2

File: DWPI

Nov 10, 2005

DERWENT-ACC-NO: 2005-784158

DERWENT-WEEK: 200580

COPYRIGHT 2007 DERWENT INFORMATION LTD

TITLE: Electrical properties evaluation apparatus for earth formation surrounding borehole, includes antenna assemblies having magnetic core formed from material having high internal magnetostrictive damping, or low magnetostriction

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">KMC</a>	<a href="#">Draw D</a>
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Term	Documents
EARTH	668330
EARTHS	22105
LAND	325567
LANDS	73384
SURFACE	8604142
SURFACES	2858102
FORMATION	2129858
FORMATIONS	111819
MOUNTAIN	85121
MOUNTAINS	7557
(L43 AND ((EARTH OR LAND OR SURFACE) WITH (FORMATION OR MOUNTAIN OR VALLEY OR DESERT OR CANYON)) SAME (WELLBORE OR WELL-BORE OR "WELL BORE" OR "BORE HOLE" OR BOREHOLE OR BORE-HOLE OR WELL)) ).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	2

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### Search Results - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 20050248341 A1

L49: Entry 1 of 4

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KVMC	Draw. De
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☐ 2. Document ID: US 6445307 B1

L49: Entry 2 of 4

File: USPT

Sep 3, 2002

US-PAT-NO: 6445307

DOCUMENT-IDENTIFIER: US 6445307 B1

TITLE: Drill string telemetry

DATE-ISSUED: September 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Rassi; Dareyoush	Swansea			GB
Zhuravlev; Yuri	Swansea			GB

US-CL-CURRENT: 340/854.6; 324/303, 340/854.8, 343/742

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 3. Document ID: US 20050248341 A1

L49: Entry 3 of 4

File: DWPI

Nov 10, 2005

DERWENT-ACC-NO: 2005-784158

DERWENT-WEEK: 200580

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TITLE: Electrical properties evaluation apparatus for earth formation surrounding borehole, includes antenna assemblies having magnetic core formed from material having high internal magnetostrictive damping, or low magnetostriction

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 4. Document ID: US 3205477 A

L49: Entry 4 of 4

File: USOC

Sep 7, 1965

US-PAT-NO: 3205477

DOCUMENT-IDENTIFIER: US 3205477 A

TITLE: Electroacoustical logging while drilling wells

DATE-ISSUED: September 7, 1965

INVENTOR-NAME: KALBFELL DAVID C

US-CL-CURRENT: 367/82; 73/152.03, 73/152.16

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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Term	Documents
MAGNET	497290
MAGNETS	203489
MAGNETIC	1709016
MAGNETICS	15619
MAGNETICALLY	183802
MAGNETICALLIES	0
MAGNETICALLYS	1
CORE	1227264
CORES	205808

CORED	22527
(L48 AND (((MAGNET OR MAGNETIC OR MAGNETICALLY) SAME (CORE OR CORED OR CORABLE OR CORING)) SAME ((MAGNETOSTRICTIVE OR MAGNETOSTRICTION OR MAGNETO-RESTRICT\$5 OR MAGNETORESTRICT\$5) WITH (DAMPENING OR DAMP\$4 OR CANCEL\$7 OR NULL\$4 OR INSULAT\$4 OR LOW OR LOWER OR LOWERING OR REDUCED OR REDUCING OR REDUCE))) ) .PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	4

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L49: Entry 2 of 4

File: USPT

Sep 3, 2002

DOCUMENT-IDENTIFIER: US 6445307 B1

TITLE: Drill string telemetry

Abstract Text (1):

A telemetry transmitter located in a portion of a drill string comprises an input for receiving and transmitting data obtained from at least one transducer arranged to sense a parameter of the drill string and/or a parameter of the surrounding medium. The transmitter comprises a magnetic dipole arranged to transmit an electromagnetic data signal, a current dipole arranged to transmit an electromagnetic data signal and control means for adaptively varying the power output from the magnetic and current dipoles, according to the orientation of the portion of the drill string containing the transmitter and according to the electrical resistivity of the medium surrounding the portion of the drill string containing the transmitter.

Brief Summary Text (4):

Among presently used wireless communication techniques such as mud-pulse, acoustic and electromagnetic, the latter is the most promising in terms of its potential for measurement whilst drilling purposes. Typically, known electromagnetic drill string telemetry transmitters comprise a low-frequency radio transmitter located adjacent the drill bit. Data obtained from transducers in the drill bit are first digitised and then transmitted from the borehole to the earth's surface through the rock formation. The signal is then detected and decoded by a receiver placed on the earth's surface, adjacent the rig site. In the frequency range of 2.5-50 Hz, this technique is capable of receiving data from a depth of 5000 meters.

Brief Summary Text (7):

Another disadvantage of known current dipoles is that it is difficult to inject sufficient current into rock types, such as dolomite, which have a high resistivity value.

Brief Summary Text (11):

Therefore in both said methods of magnetic field generation, the data at the earth's surface is often undetectable or weak depending on the resistivity and/or orientation of the portion of the drill string containing the transmitter.

Brief Summary Text (13):

The examination of the technical art shows a trend of improvement in transmitter construction, in the first place oriented towards improving the quality of the data transmitted from the borehole bottom. This concerns the increase in the power of the emitted signals in order to compensate for the inherent signal attenuation in the conductive media of the formation. Moreover, in deep drilling and especially in directional drilling for oil and gas, the drill traverses many layers with variable conductive and dielectric properties and the resistivity of clay layers over hydrocarbon deposits can change by more than 100%. This may alter the amplitude of the measured telemetry signal by superimposing on it a noise component thereby complicating the decoding of the telemetry signals.

Brief Summary Text (16):

In accordance with this invention there is provided a method of transmitting an

electromagnetic signal containing data obtained from at least one transducer situated in a drill string, the method comprising adaptively controlling the power output by magnetic and current dipoles of a transmitter located in a portion of the drill string, according to the orientation of said portion of the drill string and according to the electrical resistivity of the medium surrounding said portion of the drill string.

Brief Summary Text (17):

The present invention is partly based on the realisation that a current dipole transmitter is unsuitable for use when drilling vertically and when drilling through high resistivity rock formations, and partly based on the realisation that the magnetic field radiated by a magnetic dipole transmitter diminishes very quickly with distance and thus is unsuitable for use when drilling at larger depths. The transmitter of the present invention thus combines a current dipole and a magnetic dipole source, wherein electrical power can be adaptively distributed between these two sources, according to the orientation of the drilling and the properties of the formation, in order to establish optimised and reliable reception of data at the earth's surface.

Brief Summary Text (24):

Preferably, the power output by the magnetic dipole is increased when the resistivity of the medium surrounding the portion of the drill string containing the transmitter is above a predetermined value.

Brief Summary Text (27):

Preferably, the power output by the current dipole is increased when the resistivity of the medium surrounding the portion of the drill string containing the transmitter is below a predetermined value.

Brief Summary Text (29):

In one embodiment, the power output by said electric dipole and magnetic dipole sources are controlled from the earth's surface by transmitting a control current to the transmitter, according to data which is received from the transmitter concerning its orientation and the resistivity of its surrounding drilling medium.

Brief Summary Text (30):

In an alternative embodiment, the orientation of the portion of the drill string and the electrical resistivity of the medium surrounding said portion of the drill string are detected by the transmitter, which is then arranged to adaptively control the power output by said magnetic and current dipoles, according to the sensed orientation and resistivity values. Also, in accordance with this invention there is provided a drill string telemetry transmitter located in a portion of the drill string, the transmitter comprising a input for receiving data obtained from at least one transducer arranged to sense a parameter of the drill string and/or a parameter of the surrounding medium, a magnetic dipole arranged to transmit an electromagnetic signal comprising said data, a current dipole arranged to transmit an electromagnetic signal comprising said data and control means for adaptively varying the power output from said magnetic and current dipoles, so as to alter their respective output signals, according to the orientation of said portion of the drill string and according to the electrical resistivity of the medium surrounding said portion of the drill string.

Brief Summary Text (32):

Preferably the transmitter also comprises a sensor for sensing the electrical resistivity of the medium surrounding said portion of the drill string, said control means being arranged to adaptively vary the power applied to said magnetic and current dipoles according to an output of said resistivity sensor.

Detailed Description Text (11):

Referring to FIG. 4 of the drawings, the core of the magnetic dipole bars comprises

a stack of laminated sheets 74 of transformer steel, which are electrically insulated from each other. The stack has a width "B", height "H" and length "L". The material of the sheets 74 is selected to provide high saturation magnetisation, high permeability, low specific losses, low magnetostriction and low cost. Electrical steel such as the type used in large power transformers is a suitable material, which satisfies all of the above-mentioned requirements: saturation magnetisation up to 2T, permeability 30,000-40,000, total losses as less than 1 W/kg at 50 Hz frequency.

Detailed Description Text (13):

Magnetic and current dipoles 24, 38 are selected via switch 81, which is controlled by the control circuit 79. This circuit has a number of inputs S1 . . . SN according to the number of sensors used to monitor the drilling process, environmental parameters, as well as the control signal transmitted from the earth surface to control the telemetry transmitter parameters. A receiver arranged to receive the control signal from the earth's surface contains both magnetic and current sensors and it is possible to control the power that is output from the magnetic or current dipoles 24, 38 independently or simultaneously. In the latter case, the switch 81 connects the conductors 30 and 34 in parallel. The transmitter also comprises sensors (not shown) for sensing the orientation of the transmitter and for sensing the resistivity of the surrounding rock formation. The switch 81 is thus able to automatically control the power that is output by the magnetic and current dipoles 24, 28, either automatically by means of the sensors (not shown) or by means of control signals from the earth surface.

Detailed Description Text (18):

The magnetic fields are detected at the earth's surface 94 by a magnetometer connected to a processor 100. If necessary, in one mode of operation, control signals can be sent back down to the transmitter in the drill string, in order to adaptively vary the power output by the magnetic or current dipoles 24, 38, according to data which is received from the transmitter containing details of its orientation and the resistivity of the surrounding rock formation 16.

CLAIMS:

1. A method of transmitting an electromagnetic signal containing data obtained from at least one transducer in a drill string, the method comprising: sensing the orientation of the drill string and/or the electrical resistivity of the medium surrounding the portion of the drill string containing a transmitter and outputting a signal; supplying power to the transmitter located in the portion of the drill string, the transmitter containing a magnetic and a current dipole; and controlling the power output by the magnetic and the current dipoles to optimize the transmission of data from the transducer based on the signal.
4. A method as claimed in claim 1, increasing the power output by the magnetic dipole when the resistivity of the medium surrounding the portion of the drill string containing the transmitter is above a predetermined value.
8. A method as claimed in claim 1, increasing the power output by the current dipole when the resistivity of the medium surrounding the portion of the drill string containing the transmitter is below a predetermined value.
11. A drill string telemetry transmitter located in a portion of a drill string, the transmitter comprising an input for receiving data obtained from at least one transducer arranged to sense a parameter of the drill string and/or a parameter of the surrounding medium, a magnetic dipole arranged to transmit an electromagnetic signal comprising said data, a current dipole arranged to transmit an electromagnetic signal comprising said data and control means for adaptively varying the power output by said magnetic and current dipoles, according to the orientation of said portion of the drill string and according to the electrical



resistivity of the medium surrounding said portion of the drill string.

13. A drill string telemetry transmitter as claimed in claim 11, comprising a sensor for sensing the electrical resistivity of the medium surrounding said portion of the drill string, said control means being arranged to adaptively vary the power applied to said magnetic and current dipoles according to an output of said resistivity sensor.

17. A drill string telemetry system comprising a first transmitter located in a lower portion of the drill string, said first transmitter comprising an input connected to at least one transducer arranged to sense a parameter of the drill string and/or a parameter of the surrounding medium, said transmitter being arranged to transmit data output from the transducers, a and a second transmitter located in an upper portion of the drill string, said second transmitter comprising a receiver arranged to receive the data transmitted by said first transmitter, a magnetic dipole arranged to transmit an electromagnetic signal comprising said data, a current dipole arranged to transmit an electromagnetic signal comprising said data and control means for adaptively varying the power output from said magnetic and current dipoles, according to the orientation of said upper portion of the drill string and according to the electrical resistivity of the medium surrounding said upper portion of the drill string.

19. A drill string telemetry system as claimed in claim 17, wherein said first transmitter comprises a magnetic dipole arranged to transmit an electromagnetic signal comprising said data, a current dipole arranged to transmit an electromagnetic signal comprising said data and control means for adaptively varying the power output from said magnetic and current dipoles, according to the orientation of said lower portion of the drill string and according to the electrical resistivity of the medium surrounding said lower portion of the drill string.

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Search Results - Record(s) 1 through 2 of 2 returned.

☐ 1. Document ID: US 20050248341 A1

L50: Entry 1 of 2

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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☐ 2. Document ID: US 20050248341 A1

L50: Entry 2 of 2

File: DWPI

Nov 10, 2005

DERWENT-ACC-NO: 2005-784158

DERWENT-WEEK: 200580

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TITLE: Electrical properties evaluation apparatus for earth formation surrounding borehole, includes antenna assemblies having magnetic core formed from material having high internal magnetostrictive damping, or low magnetostriction

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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[Clear](#) [Generate Collection](#) [Print](#) [Fwd Refs](#) [Bkwd Refs](#) [Generate OACS](#)

Term	Documents
RF	382676
RFS	2625
"RADIO FREQUENCY"	0
RADIO-FREQUENCY	33379
RADIO-FREQUENCIES	353
RADIO-FREQUENCYS	0
RADIOFREQUENCY	13796
RADIOFREQUENCIES	271
RADIOFREQUENCYS	0
(49 AND (RADIOFREQUENCY OR RADIO-FREQUENCY OR RF OR "RADIO FREQUENCY")) . PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD.	2
(L49 AND (RF OR "RADIO FREQUENCY" OR RADIO-FREQUENCY OR RADIOFREQUENCY) ) . PGPB, USPT, USOC, EPAB, JPAB, DWPI, TDBD.	2

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Search Results - Record(s) 1 through 9 of 9 returned.

☐ 1. Document ID: US 20050248341 A1

L55: Entry 1 of 9

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw D
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☐ 2. Document ID: US 20050127909 A1

L55: Entry 2 of 9

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050127909

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050127909 A1

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

PUBLICATION-DATE: June 16, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE

Rottengatter, Peter

Isernhagen

DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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## 3. Document ID: US 20030038631 A1

L55: Entry 3 of 9

File: PGPB

Feb 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030038631

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030038631 A1

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

PUBLICATION-DATE: February 27, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Isernhagen		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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## 4. Document ID: US 20020125885 A1

L55: Entry 4 of 9

File: PGPB

Sep 12, 2002

PGPUB-DOCUMENT-NUMBER: 20020125885

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020125885 A1

TITLE: Side-looking NMR probe for oil well logging

PUBLICATION-DATE: September 12, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Reiderman, Arcady	Houston	TX	US
Beard, David R.	Houston	TX	US

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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☐ 5. Document ID: US 7084625 B2

L55: Entry 5 of 9

File: USPT

Aug 1, 2006

US-PAT-NO: 7084625

DOCUMENT-IDENTIFIER: US 7084625 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: August 1, 2006

## PRIOR-PUBLICATION:

DOC-ID

DATE

US 20050127909 A1

June 16, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		US
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Suppl. Notes	Abstracts	Claims	KMIC	Draw. Data
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☐ 6. Document ID: US 6844727 B2

L55: Entry 6 of 9

File: USPT

Jan 18, 2005

US-PAT-NO: 6844727

DOCUMENT-IDENTIFIER: US 6844727 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: January 18, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303; 324/338, 343/788

Full	Title	Citation	Front	Review	Classification	Date	Reference	Suppl. Notes	Abstracts	Claims	KMIC	Draw. Data
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☐ 7. Document ID: US 6580273 B2

L55: Entry 7 of 9

File: USPT

Jun 17, 2003

US-PAT-NO: 6580273

DOCUMENT-IDENTIFIER: US 6580273 B2

TITLE: Side-looking NMR probe for oil well logging

DATE-ISSUED: June 17, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/300

Full	Title	Citation	Front	Review	Classification	Date	Reference	Search	Abstracts	Claims	KWIC	Draw. De
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☐ 8. Document ID: US 6452388 B1

L55: Entry 8 of 9

File: USPT

Sep 17, 2002

US-PAT-NO: 6452388

DOCUMENT-IDENTIFIER: US 6452388 B1

TITLE: Method and apparatus of using soft non-ferritic magnetic material in a nuclear magnetic resonance probe

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/309, 324/318, 324/322

Full	Title	Citation	Front	Review	Classification	Date	Reference	Search	Abstracts	Claims	KWIC	Draw. De
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☐ 9. Document ID: US 6348792 B1

L55: Entry 9 of 9

File: USPT

Feb 19, 2002

US-PAT-NO: 6348792

DOCUMENT-IDENTIFIER: US 6348792 B1

TITLE: Side-looking NMR probe for oil well logging

DATE-ISSUED: February 19, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beard; David	Houston	TX		
Reiderman; Arcady	Houston	TX		

US-CL-CURRENT: 324/303; 324/300, 324/307

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	K/MC	Draw D
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Term	Documents
GRAIN	368648
GRAINS	197554
POWDER\$5	0
POWDER	1177313
POWDERA	25
POWDERAAS	1
POWDERABIE	1
POWDERABLE	68
POWDERABOUT	1
POWDERACTU	1
POWDERAD	8
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### Search Results - Record(s) 1 through 3 of 3 returned.

☐ 1. Document ID: US 20050248341 A1

L56: Entry 1 of 3

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: [324/303](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 2. Document ID: US 6844727 B2

L56: Entry 2 of 3

File: USPT

Jan 18, 2005

US-PAT-NO: 6844727

DOCUMENT-IDENTIFIER: US 6844727 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: January 18, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303; 324/338, 343/788

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 3. Document ID: US 6452388 B1

L56: Entry 3 of 3

File: USPT

Sep 17, 2002

US-PAT-NO: 6452388

DOCUMENT-IDENTIFIER: US 6452388 B1

TITLE: Method and apparatus of using soft non-ferritic magnetic material in a nuclear magnetic resonance probe

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/309, 324/318, 324/322

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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Bkwd Refs

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Term	Documents
MAGNET	497290
MAGNETS	203489
MAGNETIC	1709016
MAGNETICS	15619
MAGNETICALLY	183802
MAGNETICALLIES	0
MAGNETICALLYS	1
CORE	1227264
CORES	205808
CORED	22527
COREDS	5
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DENSITY)) ).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.

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### Search Results - Record(s) 1 through 9 of 9 returned.

☐ 1. Document ID: US 20050248341 A1

L61: Entry 1 of 9

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: [324/303](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D.
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☐ 2. Document ID: US 20050127909 A1

L61: Entry 2 of 9

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050127909

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050127909 A1

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

PUBLICATION-DATE: June 16, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE

Rottengatter, Peter

Isernhagen

DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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☐ 3. Document ID: US 20030038631 A1

L61: Entry 3 of 9

File: PGPB

Feb 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030038631

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030038631 A1

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

PUBLICATION-DATE: February 27, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Isernhagen		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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☐ 4. Document ID: US 20020125885 A1

L61: Entry 4 of 9

File: PGPB

Sep 12, 2002

PGPUB-DOCUMENT-NUMBER: 20020125885

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020125885 A1

TITLE: Side-looking NMR probe for oil well logging

PUBLICATION-DATE: September 12, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Reiderman, Arcady	Houston	TX	US
Beard, David R.	Houston	TX	US

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw D
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☐ 5. Document ID: US 7084625 B2

L61: Entry 5 of 9

File: USPT

Aug 1, 2006

US-PAT-NO: 7084625

DOCUMENT-IDENTIFIER: US 7084625 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: August 1, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20050127909 A1

June 16, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		US
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMC	Draw D
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☐ 6. Document ID: US 6844727 B2

L61: Entry 6 of 9

File: USPT

Jan 18, 2005

US-PAT-NO: 6844727

DOCUMENT-IDENTIFIER: US 6844727 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: January 18, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303; 324/338, 343/788

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMC	Draw D
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☐ 7. Document ID: US 6580273 B2

L61: Entry 7 of 9

File: USPT

Jun 17, 2003

US-PAT-NO: 6580273

DOCUMENT-IDENTIFIER: US 6580273 B2

TITLE: Side-looking NMR probe for oil well logging

DATE-ISSUED: June 17, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/300

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw De
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☐ 8. Document ID: US 6452388 B1

L61: Entry 8 of 9

File: USPT

Sep 17, 2002

US-PAT-NO: 6452388

DOCUMENT-IDENTIFIER: US 6452388 B1

TITLE: Method and apparatus of using soft non-ferritic magnetic material in a nuclear magnetic resonance probe

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/309, 324/318, 324/322

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw De
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☐ 9. Document ID: US 6348792 B1

L61: Entry 9 of 9

File: USPT

Feb 19, 2002

US-PAT-NO: 6348792

DOCUMENT-IDENTIFIER: US 6348792 B1

TITLE: Side-looking NMR probe for oil well logging

DATE-ISSUED: February 19, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beard; David	Houston	TX		
Reiderman; Arcady	Houston	TX		

US-CL-CURRENT: 324/303; 324/300, 324/307

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KMC	Draw D
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Term	Documents
ANTENNA	397782
ANTENNAS	95470
COIL	1326024
COILS	439974
PROBE	397662
PROBES	186685
WINDING	729911
WINDINGS	246991
RING	2511955
RINGS	705080
ANULUS	389
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### Search Results - Record(s) 1 through 3 of 3 returned.

☐ 1. Document ID: US 20050248341 A1

L62: Entry 1 of 3

File: PGPB

Nov 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050248341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050248341 A1

TITLE: Antenna core material for use in mwd resistivity measurements and d nmr measurements

PUBLICATION-DATE: November 10, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kruspe, Thomas	Wienhausen	TX	DE
Reiderman, Arcady	Houston		US
Blanz, Martin	Celle		DE
Rottengatter, Peter	Celle		DE

US-CL-CURRENT: 324/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. D
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☐ 2. Document ID: US 6844727 B2

L62: Entry 2 of 3

File: USPT

Jan 18, 2005

US-PAT-NO: 6844727

DOCUMENT-IDENTIFIER: US 6844727 B2

TITLE: Method and apparatus of reducing ringing in a nuclear magnetic resonance probe

DATE-ISSUED: January 18, 2005

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruspe; Thomas	Wienhausen			DE
Reiderman; Arcady	Houston	TX		
Blanz; Martin	Celle			DE
Rottengatter; Peter	Isernhagen			DE

US-CL-CURRENT: 324/303; 324/338, 343/788

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KMIC	Draw D
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☐ 3. Document ID: US 6452388 B1

L62: Entry 3 of 3

File: USPT

Sep 17, 2002

US-PAT-NO: 6452388

DOCUMENT-IDENTIFIER: US 6452388 B1

TITLE: Method and apparatus of using soft non-ferritic magnetic material in a nuclear magnetic resonance probe

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reiderman; Arcady	Houston	TX		
Beard; David R.	Houston	TX		

US-CL-CURRENT: 324/303; 324/309, 324/318, 324/322

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KMIC	Draw D
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Term	Documents
MAGNET	497290
MAGNETS	203489
MAGNETIC	1709016
MAGNETICS	15619
MAGNETICALLY	183802
MAGNETICALLIES	0
MAGNETICALLYS	1
CORE	1227264
CORES	205808
CORED	22527
COREDS	5
(L61 AND ((MAGNET OR MAGNETIC OR MAGNETICALLY) SAME (CORE OR CORED OR CORABLE OR CORING)) SAME (NONFERRITE OR NONFERRITIC\$4 OR NON-FERRITE OR NON-FERRITIC\$4) SAME (POWDER\$5 OR GRAIN) SAME (SATURAT\$4 WITH FLUX WITH	3

DENSITY)) ).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.

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10/518125

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[File 2] INSPEC 1898-2006/Feb W3  
 [File 155] MEDLINE(R) 1951-2006/Feb 27  
 [File 5] Biosis Previews(R) 1969-2006/Feb W3  
 [File 6] NTIS 1964-2006/Feb W1 DSSSSSSS  
 [File 8] Ei Compendex(R) 1970-2006/Feb W3  
 [File 73] EMBASE 1974-2006/Feb 27 [File 94] JICST-EPlus 1985-2006/Dec W1  
 [File 94] JICST-EPlus 1985-2006/Dec W2  
 [File 95] TEME-Technology & Management 1989-2006/Feb W4  
 [File 35] Dissertation Abs Online 1861-2006/Feb  
 [File 144] Pascal 1973-2006/Feb W1  
 [File 99] Wilson Appl. Sci & Tech Abs 1983-2006/Jan  
 [File 34] SciSearch(R) Cited Ref Sci 1990-2006/Feb W3  
 [File 434] SciSearch(R) Cited Ref Sci 1974-1989/Dec  
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 [File 162] Global Health 1983-2006/Jan  
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 [File 357] Derwent Biotech Res. 1982-2006/Feb W4  
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 [File 294] ONTAP(R) SciSearch(R) Cited Ref Science  
 [File 256] TecInfoSource 82-2006/Feb (c) 2006 Info.Sources Inc  
 [File 987] TULSA (Petroleum Abs) 1965-2006/Feb W2  
 [File 105] AESIS 1851-2001/Jul  
 [File 103] Energy SciTec 1974-2006/Feb B2  
 [File 58] GeoArchive 1974-2005/Jun  
 [File 292] GEOBASE(TM) 1980-2006/Feb W4  
 [File 89] GeoRef 1785-2006/Feb B2  
 [File 239] Mathsci 1940-2006/Apr  
 [File 245] WATERNET(TM) 1971-2006/Oct  
 [File 96] FLUIDEX 1972-2006/Aug  
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S2	17240851	S TOPOGRAPH?????? OR TOPOLOG????? OR LANDSCAP?????? OR MOUNTAIN?????? OR FORMAT????? OR TUNDRA OR TERRAIN OR AREA? ? OR PROFIL?????? OR DESERT OR CANYON OR VALLEY OR VALLIES
S3	10935150	S WELL()BORE OR BOREHOLE? ? OR BORE()HOLE OR WELL????? OR DOWN()HOLE? ? OR DOWNHOLE? ? OR WELLBORE? ?
S4	6578166	S B1 OR B()1 OR B()SUB()1 OR FIELD????(3N)MAP????? OR RADIO? ?(3N)FREQUENC????? OR (MAGNET?????? OR ELECTROMAGNET????? OR RF? ? OR ELECTRIC????? OR PULS????? OR REFOCUS????? OR IMAG?????) (3N) (FIELD????? OR POWER????? OR PULS????? OR SEQUENC????? OR EXCIT????? OR STIMULAT???????? OR SWITCH????? OR TRANSCIV?????? OR SIGNAL?????) OR SAR? ? OR SPECIFIC()ABSOR????????()RATE? ? OR R()F OR RF OR RADIOFREQUENC????? OR RFSP OR SSFP OR STEADY()STATE()FREE()PRECESSION OR FREE(3N)PRECESS????
S5	1655624	S MAGNET?????(3N) (CORE OR CORING OR ROD OR RODS OR BAR OR BARS) OR SOLENOID OR ELECTROMAGNET???????? OR ELECTRO()MAGNET?????
S6	8879014	S ANTENNAE OR COIL????? OR WIRE? ? OR WIRING OR ANTENNA OR TRANSMI???????? OR TRANSCIV????? OR RECEIV????? OR RADIO??? OR AERIAL OR WINDING
S7	78766	S MAGNETOSTRICT???????? OR MAGNET??? (2N) (STRICT????? OR RESTRICT???????? OR DEFORM????? OR DEGRAD????? OR DETERIORAT????? OR DECLIN????? OR DEGENERAT????? OR BEND??????)
S8	34610613	S DAMP????????? OR NULL????????????? OR ATTENUAT????? OR REDUC????????? OR CANCEL????? OR LOWER????? OR LOW OR MINIM????? OR DECREAS????? OR SUPPRES????????? OR ABAT????????? OR QUENCH????? OR REMOV?????
S9	2	S S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7 AND S8
S10	2	RD (unique items)
S11	188735	S (EVALUAT??? OR ANALY???) (3N) (APPT OR DEVICE OR APPARATUS OR MECHANISM OR UNIT)
S12	0	S S11 AND S1 AND S2 AND S3 AND S4 AND S5 AND S6 AND S7
S13	0	S S11 AND S1 AND S2 AND S3 AND S7

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S16 0 S S14 AND S7 AND S3  
S17 19 S S3 AND S7 AND S11  
S18 7 RD (unique items)  
  
S19 389 S S7(3N)S8 AND (INTERNAL??? OR INTRINSIC???? OR INSIDE OR INNER OR INTERIOR  
INTEGRAT????)  
  
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S21 2 S S20 AND S5  
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S23 1 S S20 AND S1 AND S2  
S24 4 S S20 AND S1  
S25 3 RD (unique items)  
S26 2 S S20 AND S2  
S27 2 RD (unique items)  
S28 0 S S14 AND S19  
S29 38 S S14 AND S5  
S30 3 S S29 AND S3  
S31 3 RD (unique items)  
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S33 1300 S S32 AND (POWDER???? OR GRANUL?? OR GRAIN?? OR PARTICULATE OR PARTICULE)  
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S35 4 RD (unique items)  
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HYSTERESIS)  
  
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S39 7 RD (unique items)  
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S44 5 S S42 AND S2

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TULSA (Petroleum Abs)

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0001748147 **Petroleum Abstract No:** 793565

**DEVELOPMENT OF A PRACTICAL EKL (ELECTROKINETIC LOGGING) SYSTEM**

CLARKE, R; KOBAYASHI, G; MILLAR, J; TAKAHASHI, T; TOSHIOKA, T

GROUNDFLOW LTD; OYO CORP

43RD ANNU. SPWLA LOGGING SYMP. (Oiso, Japan, 6/2-5/2002) TRANS. pap. no.H, 2002. (12 pp; 8 refs)  
2002

**Language:** ENGLISH

**Document Type:** MEETING PAPER TEXT; AT

**Record Type:** ABSTRACT

EKL can estimate soil and rock permeability by measuring electrokinetic signals. Electrokinetic signals occur when Biot fast P-waves intersect interfaces where hydrogeological properties (e.g., permeability, porosity, fluid conductivity, fluid viscosity, or ionic concentration) change. Such interfaces generate Biot slow P-waves, which decay rapidly and generate electrical signals. The EKL system measures these electrical signals to estimate the formation hydrogeological properties. The EKL sonde has a magnetostrictive source which emits acoustic waves with two fixed frequencies (ca 454 and 2,260 Hz) radially in all directions and two electrodes located at ca 3 cm and 33 cm apart from the source. Acoustic waves from the source are emitted continuously and electrical potentials generated by means of electrokinetic phenomena are measured at the electrodes. The pressure wave from the source propagates into the formation through the borehole water and generates electrokinetic signals in the permeable formation. The risetime of the generated electrokinetic signal is inversely proportional to the permeability of the formation. Field examples of the electrokinetic responses show good reproducibility and signal-to-noise ratio.

**Primary Descriptor:** SONIC LOGGING

**Major Descriptors:** ELASTIC WAVE; ELASTIC WAVE LOGGING; ELECTRIC POTENTIAL; ELECTRICITY; ELECTROKINETIC POTENTIAL; PERMEABILITY; PERMEABILITY (ROCK); PHYSICAL PROPERTY; SOUND WAVE; SOUND WAVE SOURCE; WAVE; WAVE SOURCE; WELL LOGGING; WELL LOGGING EQUIPMENT

**Minor Descriptors:** ANTENNA; APPARENT RESISTIVITY; BIOT THEORY; BOREHOLE; CHART; COMPARISON; COMPRESSIONAL WAVE; COMPRESSIONAL WAVE VELOCIT; CONNATE WATER; DATA; DIPOLE ; ELECTRICAL CONDUCTIVITY; ELECTRICAL EQUIPMENT; ELECTRICAL EXPLORATION; ELECTRICAL EXPLORATION EQ; ELECTRICAL PROPERTY; ELECTRODE; ELECTROKINETICS; ELECTROMAGNETIC WAVE; ELECTROMAGNETIC WAVE SRCE; ENGLISH; EQUATION; EXPLORATION; FLOW CAPACITY; FORMATION EVALUATION; FRACTURE CONDUCTIVITY; FRACTURE POROSITY; FREQUENCY; GEOLOGY; GEOPHYSICAL EQUIPMENT; GEOPHYSICAL EXPLORATION; GRAPH; HYDROLOGY; INSTRUMENT; INTERFACE; INTERPRETATION; KINETICS; KOZENY CARMEN EQUATION; LOW FREQUENCY; MAGNETIC RESONANCE; MAGNETOSTRICTION TRANSDUCR; MATHEMATICS; MEETING PAPER TEXT; MULTIPLEXING; NOISE; NUCLEAR LOGGING; NUCLEAR MAGNETIC LOGGING; NUCLEAR MAGNETIC RESONANCE; OPEN HOLE; POROSITY; POROSITY (ROCK); REPRODUCIBILITY; RESISTIVITY; RESONANCE; ROCK; ROCK PROPERTY; SEDIMENT (GEOLOGY); SIGNAL TO NOISE RATIO; SOIL (EARTH); SONDE; THEORY; TRANSDUCER; VELOCITY; WATER; WATER (SUBSURFACE); WAVE PROPERTY; WAVE VELOCITY; WAVEFORM; WELL LOGGING & SURVEYING; WELL LOGGING DATA

**Subject Heading:** WELL LOGGING & SURVEYING

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INSPEC

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08052719 INSPEC Abstract Number: A2001-21-8170B-061, B2001-11-0590-061

**Title:** Evaluation of r-value of stainless steel sheets with electromagnetic acoustic transducer

**Author** Murayama, R.

**Author Affiliation:** Dept. of Intelligent Mech. Eng., Fukuoka Inst. of Technol., Japan

**Journal:** Journal of the Society of Materials Science, Japan vol.50, no.7 p. 778-82

**Publisher:** Soc. Mater. Sci. Japan ,

**Publication Date:** July 2001 **Country of Publication:** Japan

**CODEN:** ZARYAQ **ISSN:** 0514-5163

**SICI:** 0514-5163(200107)50:7L:778:EVSS;1-9

**Material Identity Number:** J214-2001-010

N/A PAF 2/16/2007

**Language:** Japanese **Document Type:** Journal Paper (JP)

**Treatment:** Experimental (X)

**Abstract:** A Lamb wave-mode electromagnetic acoustic transducer (EMAT) which makes use of the Lorenz force and magnetostrictive effect is produced as a device to evaluate the r-value of stainless steel sheet. Correlation between fundamental characteristics of this device and r-value obtained from uniaxial tensile test is examined for stainless steel and low carbon steel sheets. It is confirmed that the use of this device enables the evaluation of the r-values of ferritic stainless and austenitic stainless steel sheets as well as low carbon steel sheets. It is also shown that the value of Delta r which gives the planar anisotropy of a sheet can be evaluated in good accuracy for the stainless steel sheets than for the low carbon steel sheet. ( 9 Refs)

**Subfile:** A B

**Descriptors:** stainless steel; surface acoustic waves; ultrasonic materials testing

**Identifiers:** ultrasonic materials testing; electromagnetic acoustic transducer; Lamb wave-mode electromagnetic acoustic transducer; EMAT; Lorenz force; magnetostrictive effect; ferritic stainless steel; austenitic stainless steel; nondestructive testing

**Class Codes:** A8170B (Nondestructive testing: acoustic methods); A4385G (Measurement by acoustic techniques); B0590 (Materials testing); B7820 (Sonic and ultrasonic applications)

**Chemical Indexing:**

Cr ss - Fe ss - C ss (Elements - 3)

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18/9/2 (Item 2 from file: 2) **Links**

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**INSPEC**

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06123439 **INSPEC Abstract Number:** B9601-7230-028, C9601-3260B-010

**Title:** Development and analysis of a self-sensing magnetostrictive actuator design

**Author** Pratt, J.; Flatau, A.B.

**Author Affiliation:** Dept. of Aerosp. Eng. & Eng. Mech., Iowa State Univ., Ames, IA, USA

**Journal:** Journal of Intelligent Material Systems and Structures vol.6, no.5 p. 639-48

**Publication Date:** Sept. 1995 **Country of Publication:** USA

**CODEN:** JMSSER **ISSN:** 1045-389X

**U.S. Copyright Clearance Center Code:** 1045-389X/95/050639-10\$10.00/0

*R/A TAF*  
*2/16/2007*

**Language:** English **Document Type:** Journal Paper (JP)

**Treatment:** Practical (P)

**Abstract:** A self-sensing magnetostrictive actuator design based on a linear systems model of magnetostrictive transduction for Terfenol-D is developed and analyzed. Self-sensing, or the ability of a transducer to sense its own motion as it is being driven, has been demonstrated for electromechanical transducers such as moving voice coil loudspeakers and piezoelectric distributed moment actuators. In these devices, self-sensing was achieved by constructing a bridge circuit to extract a signal proportional to transducer motion even as the transducer was being driven. This approach is analyzed for a magnetostrictive device. Working from coupled electromechanical magnetostrictive transduction equations found in the literature, the concept of the transducer's "blocked" electrical impedance and motional impedance are developed, and a bridge design suggested and tested. However, results presented in this paper will show that magnetostrictive transduction is inherently nonlinear, and does not, therefore, lend itself well to the traditional bridge circuit approach to self-sensing. ( 12 Refs)

**Subfile:** B C

**Descriptors:** dysprosium alloys; electric actuators; iron alloys; magnetostrictive devices; terbium alloys; transducers

**Identifiers:** self-sensing magnetostrictive actuator design; magnetostrictive transduction; Terfenol-D; moving voice coil loudspeakers; piezoelectric distributed moment actuators; bridge circuit; transducer motion; coupled electromechanical magnetostrictive transduction equations; blocked electrical impedance; motional impedance; FeTbDy

**Class Codes:** B7230 (Sensing devices and transducers); B3120J (Magneto-acoustic, magnetoresistive, magnetostrictive and magnetostatic wave devices); B8380 (Control gear and apparatus); C3260B (Electric actuators and final control equipment); C3240 (Transducers and sensing devices)

**Chemical Indexing:**

FeTbDy ss - Dy ss - Fe ss - Tb ss (Elements - 3)

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18/9/3 (Item 3 from file: 2) [Links](#)

Fulltext available through: USPTO Full Text Retrieval Options SCIENCEDIRECT  
INSPEC

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04925638 INSPEC Abstract Number: A91093222

**Title:** Physical mechanism of magnetic-field-induced shift of the resonance frequency of a composite ferrite-piezoelectric-ceramic resonator

**Author** Gelyasin, A.E.; Laletin, V.M.

**Author Affiliation:** Technol. Inst. of Light Ind., Vitebsk, USSR

**Journal:** Pis'ma v Zhurnal Tekhnicheskoi Fizika vol.16, no.15-16 p. 26-8

**Publication Date:** Aug. 1990 **Country of Publication:** USSR

**CODEN:** PZTFDD **ISSN:** 0320-0108

**Translated in:** Soviet Technical Physics Letters vol.16, no.8 p. 572-3

**Publication Date:** Aug. 1990 **Country of Publication:** USA

**CODEN:** STPLD2 **ISSN:** 0360-120X

**U.S. Copyright Clearance Center Code:** 0360-120X/90/080572-02\$02.00

*N/A PAI- 2/16/2007*

**Language:** English **Document Type:** Journal Paper (JP)

**Treatment:** Experimental (X)

**Abstract:** The nature of the effect of a magnetic field on the piezoelectric resonant frequency of a composite resonator is described, in general, by the following scheme: field to deformation of the ferrite phase to deformation of the piezoelectric phase to shift of the piezoelectric resonant frequency. The ferrite phase can be deformed because of **magnetostriction** as well as other related phenomena. They **analyze** the most probable **mechanism** of the effect of a magnetic field on the piezoelectric resonant frequency. ( 4 Refs)

**Subfile:** A

**Descriptors:** ceramics; ferrites; **magnetostriction**; piezoelectricity

**Identifiers:** magnetic-field-induced shift; resonance frequency; composite ferrite-piezoelectric-ceramic resonator; ferrite phase; **magnetostriction**

**Class Codes:** A7580 (Magnetomechanical and magnetoelectric effects, magnetostriction)

18/9/4 (Item 1 from file: 73) [Links](#)

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06206988 EMBASE No: 1995240395

**An ultrasonic motor using low-frequency magnetostrictive excitation for continuous and stepwise angular rotation**

Saksena T.K.; Chandra M.

Ultrasonics Section, National Physical Laboratory, New Delhi-110012 India

Journal of the Acoustical Society of America ( J. ACOUST. SOC. AM. ) ( United States ) 1995 , 98/2 I (981-987)

CODEN: JASMA ISSN: 0001-4966

Document Type: Journal ; Article

Language: ENGLISH Summary Language: ENGLISH

A new design for an ultrasonic motor operating at a frequency of about 14.5 kHz for generating continuous as well as stepwise angular rotation has been developed. The device uses a **magnetostrictive** ferrite transducer and a single power amplifier for its operation. A possible mechanism for the operation of the ultrasonic motor has been suggested. The variation of the speed of rotation as a function of frequency, excitation voltage, and load has been studied. The measurement of the performance characteristics reveal that the ultrasonic motor is capable of giving 100 rpm at 34.6-W electric output. The rpm of the rotating disk can be controlled by a slight adjustment of the frequency of the rf signal to the driving transducer. The load capability of the device is 1 kg. Using a tone burst of 10 ms, an angular step of 1.8 deg has been realized.

**MEDICAL DESCRIPTORS:**

\* excitation; \*ultrasound

article; device; frequency analysis; nonhuman; piezoelectricity; priority journal; transducer; vibration

**SECTION HEADINGS:**

011 Otorhinolaryngology

MA TAF 2/16/2007

18/9/5 (Item 1 from file: 144) [Links](#)

Pascal

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16647351 PASCAL No.: 04-0298132

Transient modeling of coupled magnetoelastic problems in electric machines

2002 IEEE Power Engineering Society summer meeting : Chicago IL, 21-25 July 2002

MOHAMMED O A; CALVERT T E; PETERSEN L; MCCONNELL R  
Department of Electrical & Computer Engineering, Florida  
International University, Miami, FL 33174, United States; Naval Surface  
Warfare Center, Carderock Division, Machinery R&D Directorate,  
Philadelphia, PA, United States

IEEE Power Engineering Society, United States

IEEE Power Engineering Society. Summer meeting (Chicago IL USA)

2002-07-21

2002 281-287

Publisher: IEEE, Piscataway NJ

ISBN: 0-7803-7518-1 Availability: INIST-Y 37994; 354000117852770500

No. of Refs.: 9 ref.

Document Type: C (Conference Proceedings) ; A (Analytic)

Country of Publication: United States

Language: English

This paper investigates some aspects on noise and vibrations of electrical machinery based upon the coupling between the magnetic field and the mechanical deformation in the stator. This coupling is typically considered by using reluctance forces. Since the deformations occurring are small compared to the machine's dimensions, there is no feedback to the magnetic system in numerical models. However, stator deformations are caused not only by reluctance forces, but also by **magnetostriction** effect of the stator iron. **Magnetostriction** is one of the main causes of noise in electromagnetic systems particularly when the flux density is above 1.5 Teslas. Here, we develop numerical models that incorporate **magnetostriction** effects and all other possible electromechanical forces and related material interactions. **Magnetostriction** presents a problem at all levels of frequencies. At frequencies, particularly 2E, **magnetostrictive** forces are undesirable and can be large as well as generate acoustic noise, which can impede the system's performance. The **magnetostrictive** deformations can be calculated based upon the magnetic field. If the **magnetostrictive** deformations are slightly higher than the magnitude of the deformations caused by the reluctance forces, there will be a need for feedback to the magnetic system. In order to account for this effect, the **magnetostriction** characteristic of iron  $\mu(H)$  is needed. The dependency of permeability on mechanical stress must be accounted for and be built into a strong coupling scheme. Implementation results on a 2-hp, permanent magnet motor indicate that **magnetostrictive** forces are

significant and must be accounted for in the electromagnetic system's design stage.

English Descriptors: Mathematical model; Magnetoelastic effect; Electric machine; Magnetic coupling; **Magnetic** field; Mechanical **deformation**; Stator; Comparative study; Feedback regulation; **Magnetostriction**; Electromagnetic noise; Electromagnetic device; Flux density; Electromechanical system; **Magnetostrictive device**; Acoustic noise; Performance **evaluation**; Permeability; Mechanical stress; Implementation; Permanent magnet motors

French Descriptors: Modele mathematique; Effet magnetoelastique; Machine electrique; Accouplement magnetique; Champ magnetique; Deformation mecanique; Stator; Etude comparative; Retroaction; **Magnetostriction**; Bruit electromagnetique; Dispositif electromagnetique; Densite flux; Systeme electromecanique; Dispositif **magnetostrictif**; Bruit acoustique; Evaluation performance; Permeabilite; Contrainte mecanique; Implementation; Moteur magnetoelectrique

MA TAF 2/16/2007

Classification Codes: 001D05D

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18/9/6 (Item 1 from file: 987) [Links](#)

TULSA (Petroleum Abs)

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0001456673 **Petroleum Abstract No:** 502091

**PUMPING APPARATUS AND PUMP CONTROL APPARATUS AND METHOD**

**Author (Inventor):** ESLINGER, D M

**Patent Assignee:** HALLIBURTON CO

**Patent Information:** U.S. 4,990,058, c. 2/5/91, f. 11/28/89 (Appl. 442,031) (F04B-049/00). (17 pp; 17 claims)

**Patent (Number Kind, Date):** US 4990058 , 19910205

**Application (Number, Date):** US 442031, 19891128

1991

**Publication Year:** 1991

**IPC Code:** F04B-049/00

**Language:** ENGLISH

**Document Type:** PATENT; P

**Record Type:** ABSTRACT

A pumping apparatus comprises a fluid end cylinder carrying a double-acting piston that is reciprocated by a hydraulic servo actuator to provide an expanded flow range ability for metering fluids. The actuator comprises (1) a hydraulic cylinder carrying a drive piston connected to the fluid end piston, (2) a servo valve, (3) a position transducer, and (4) a microprocessor-based controller. The controller is programed to accommodate acceleration and deceleration of the extend and retract phases of a pump cycle to maintain constant average flow rate out of the fluid end. A control apparatus for controlling a pump and a related method are also described.

**Primary Descriptor:** RECIPROCATING PUMP

**Major Descriptors:** AUTOMATIC CONTROL; BLENDING; CONTROL; FRACTURING; FRACTURING FLUID; HYDRAULIC FRACTURING; MEASURING; METERING; MIXING; POSITIVE DISPLACEMENT PUMP; PUMP; TESTING

**Minor Descriptors:** (P) USA; ACID; ACIDIZING; ADDITIVE; APPROXIMATION; AUTOMATION; BLENDER; BLOCK DIAGRAM; CALCULATING; CEMENTING; CHART; CHEMICAL PROCESS; COMPOUND; COMPUTER; COMPUTER CONTROL; COMPUTING; CONTROL EQUIPMENT; CONTROL VALVE; DATA; DETECTOR; DIAGRAM; ENGINEERING DRAWING; ENGLISH; EQUATION; EQUIPMENT LAYOUT; FEEDBACK; FLOW CHART; FLOW CONTROL; FLOW MEASURING; FLUID FLOW; FLUID FLOW EQUATION; FRACTURING FLUID ADDITIVE; GRAPH; HALLIBURTON CO; INSTRUMENT; MAGNETIC DETECTOR; **MAGNETOSTRICTION** EFFECT; **MAGNETOSTRICTION** TRANSDUCER; MATHEMATICAL ANALYSIS; MATHEMATICS; METERING UNIT; MICROPROCESSOR; MIXER; PATENT; PISTON; PUMPING; SERVOMECHANISM; SIGNAL; TABLE (DATA); TRANSDUCER; VALVE; VOLUME; **WELL** COMPLETION SERVICING & WORKOVER; **WELL** COMPLETION; **WELL** STIMULATION; **WELL** WORKOVER

**Subject Heading:** **WELL** COMPLETION SERVICING & WORKOVER

*MA TPE 2/16/2007*

18/9/7 (Item 1 from file: 95) [Links](#)

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TEME-Technology & Management

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01665524 20020804459

**Magnetostrictive pulse-echo device for non-destructive evaluation of cylindrical steel materials using longitudinal guided waves**

( Magnetostruktive Impuls-Echo-Anordnung zur zerstörungsfreien Bewertung von zylinderförmigen Stahlmaterialien mit longitudinalen geführten Wellen )

Laguerre, L; Aime, J-C; Brissaud, M

Lab. Central des Ponts et Chaussées, Bouguenais, F; INSA Inst. Nat. des Sci. Appl. de Lyon, Villeurbanne, F

Ultrasonics, v39, n7, pp503-514 , 2002

**Document type:** journal article **Language:** English

**Record type:** Abstract

ISSN: 0041-624X

**Abstract:**

An Rundstäben und Stabbuendeln, wie sie in der Bauindustrie verwendet werden, wurden mit einem labormaessigen Ultraschall-Geraetesystem Experimente zum Fehlernachweis durchgefuehrt. Die Anregung und der Empfang der Ultraschallimpulse erfolgte mit elektromagnetischen Ultraschallwandlern (EMUs) unter Ausnutzung des direkten bzw. inversen magnetostruktiven Effekts. Das hochfrequente magnetische Wechselfeld wurde von einer das Stabmaterial umgebenden Spule (Windungszahl 15, Laenge 10 mm, Innendurchmesser 30 mm) erzeugt. Diese HF-Spule wurde von einer zweiten Spule (Windungszahl 900, Laenge 225 mm, innerer Durchmesser 70 mm) umschlossen, welche das statische Magnetfeld aufbaut. Die HF-Sende-Spule wurde mit Sinusbürsts, die nach einer Gauss-Funktion amplitudengewichtet wurden, angesteuert. Die Bürst-Mittenfrequenzen lagen unterhalb von 500 kHz. In den Experimenten wurden systematisch die Staerke des statischen Feldes sowie die Amplitude und die Frequenz des Wechselfeldes variiert, um zum einen den Sende-Empfangswirkungsgrad zu optimieren und zum anderen moeglichst eine gute Linearitaet des Arbeitsbereichs sicher zu stellen. Zur Verbesserung des Signal-Stoer-Abstandes wurde eine Puls-Kompressionstechnik auf die Empfangssignale angewendet. (Gebhardt, W.)

**Descriptors:** NDT--NONDESTRUCTIVE TESTING; ULTRASONIC TESTING; ROUND TEST PIECE; MERCHANT BAR; TEST DEVICES; LABORATORY TEST; DEFECT DETECTION; ELECTRODYNAMICAL CONVERTERS

**Identifiers:** Ultraschallpruefung; Rundmaterial; Fehlernachweis; Stab

22/9/1 (Item 1 from file: 987) [Links](#)

TULSA (Petroleum Abs)

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0001787304 Petroleum Abstract No: 832722

**ANTENNA CORE MATERIAL FOR USE IN MWD [MEASURING-WHILE-DRILLING] RESISTIVITY MEASUREMENTS AND NMR [NUCLEAR MAGNETIC RESONANCE] MEASUREMENTS**

**Author (Inventor):** BLANZ, M; KRUSPE, T; REIDERMAN, A; ROTTENGATTER, P

**Patent Assignee:** BAKER HUGHES INC

**Patent Information:** World 04/001,436A2, p. 12/31/2003, f. 6/17/2003, pr. U.S. 6/20/2002 (Appl. 177,618) (G01R-033/44). (37 pp; 50 claims)

**Patent (Number Kind, Date):** WO 04/001436 A2, 20031231

**Application (Number, Date):** WO, 20030617

**Priority (Number, Date):** US 177618, 20020620  
2003

**Publication Year:** 2003

**IPC Code:** G01R-033/44

**Language:** ENGLISH

**Document Type:** PATENT; P

**Record Type:** ABSTRACT

The use of a material is described having a high **internal magnetostrictive damping** and/or using material with explicitly **low magnetostriction** as an antenna core material for NMR and resistivity devices in a **borehole**. The probe's structural geometry facilitates the use of material, which has a relatively low magnetic permeability. The well logging apparatus has a powdered soft **magnetic material core** as a flux concentrator for sensing NMR properties within earth formations adjacent a **wellbore**.

**Primary Descriptor:** ANTENNA

**Major Descriptors:** CONSTRUCTION MATERIAL; ELECTRICAL EQUIPMENT; LOGGING WHILE DRILLING; MAGNET ; MAGNETOSTRICTION EFFECT; NUCLEAR LOGGING; NUCLEAR MAGNETIC LOGGING; WELL LOGGING

**Minor Descriptors:** (P) WORLD; ALLOY; AMORPHOUS; BAKER HUGHES INC; BUSINESS OPERATION; CHART; COMPOUND; DAMPING; DEFORMATION; DETECTION; DETECTOR; DIAGRAM; DIELECTRIC PROPERTY; DRILLING (WELL); ELECTRICAL PROPERTY; **ELECTROMAGNETIC FIELD**; **ELECTROMAGNETIC WAVE**; **ELECTROMAGNETISM**; ELECTRONIC EQUIPMENT; ENGLISH; EQUATION; EQUIPMENT LAYOUT; FERROUS ALLOY; FORMATION EVALUATION; FORMING; FREQUENCY; GRAPH; HARDNESS; HYSTERESIS; INDUCTANCE COIL; INSTRUMENT; INTERPRETATION; IRON OXIDE; MAGNETIC DETECTOR; MAGNETIC FIELD; MAGNETIC PERMEABILITY; MAGNETIC RESONANCE; MAGNETISM; MANUFACTURING; MATHEMATICS; MECHANICAL PROPERTY; METAL; MOLDING; MOLECULAR STRUCTURE; NUCLEAR MAGNETIC RESONANCE; OXIDE; PARTICLE SIZE; PATENT; PERMEABILITY; PHYSICAL PROPERTY; RADIO WAVE; RECEIVER (ELECTRONIC); REMOTE SENSING; REMOTE SENSOR; RESONANCE; STAINLESS STEEL; STEEL; STRUCTURE; TRANSMITTER; WAVE; WAVE FREQUENCY; **WELL LOG** ; **WELL LOGGING & SURVEYING**; **WELLBORE DIAGRAM**

**Subject Heading:** WELL LOGGING & SURVEYING

*Applicant's own work  
N/A TAF 2/16/2007*

22/9/2 (Item 1 from file: 103) [Links](#)

Energy SciTec

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04107463 EDB-97-016167

**Title:** Quench characteristics of 1-m-long SSC model dipole magnets

**Author(s):** Hosoyama, K.; Kabe, A.; Hara, K.; Nakai, H. (KEK-National Lab. for High Energy Physics, Tsukuba, Ibaraki (Japan)) (and others)

**Title:** Advances in cryogenic engineering. Volume 41, Part A B

**Author(s)/Editor(s):** Kittel, P. (ed.)

**Conference Title:** 1996 Cryogenic engineering conference and international cryogenic materials conference

**Conference Location:** Columbus, OH (United States) **Conference Date:** 17-21 Jul 1995

**Publisher:** New York, NY (United States) Plenum Press

**Publication Date:** 1996 p 359-366 (2037 p)

**Report Number(s):** CONF-950722--

**Document Type:** Analytic of a Book; Conference Literature

**Language:** English

**Journal Announcement:** EDB9703

**Availability:** Plenum Press Corp., 233 Spring Street, New York, NY 10013 (United States)

**Subfile:** ETD (Energy Technology Data Exchange); INS (US Atomindex input) . IIA (DOE contractor)

**US DOE Project/NonDOE Project:** NP

**Country of Origin:** Japan

**Country of Publication:** United States

**Abstract:** A series of fifteen 5-cm-aperture, 1-m-long SSC model dipole magnets with various types of end design and cable have been designed and fabricated at National Laboratory for High Energy Physics (KEK). The ramp-rate-dependent quench tests of the magnets KEKNo.3 to No.15 were performed in a 4.2-K vertical cryostat. A ramp-rate-dependent test of the magnet KEKNo.6 was also performed in 1.7-K pressurized superfluid helium. Special ramp tests so called [open quotes]heating[close quotes] and [open quotes]cooling[close quotes] experiments were also performed on the magnet KEKNo.10, as well as heat induced quench tests using the spot heaters installed in midplane of inner coils of the magnets KEKNo.7 and No.15 and in the splice part of the magnet KEKNo.13Y.

**Major Descriptors:** \*BEAM BENDING MAGNETS -- PERFORMANCE TESTING; \*BEAM BENDING MAGNETS -- QUENCHING

**Descriptors:** SUPERCONDUCTING MAGNETS; SUPERCONDUCTING SUPER COLLIDER

**Broader Terms:** ACCELERATORS; CYCLIC ACCELERATORS; ELECTRICAL EQUIPMENT; ELECTROMAGNETS; EQUIPMENT; MAGNETS; STORAGE RINGS; SUPERCONDUCTING DEVICES; SYNCHROTRONS; TESTING

**Subject Categories:** 430300\* -- Particle Accelerators -- Auxiliaries & Components

**INIS Subject Categories:** E1633\* -- Accelerators -- Other accelerator components

N/A TRF 2/16/2007



23/9/1 (Item 1 from file: 987) [Links](#)

TULSA (Petroleum Abs)

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0001787304 **Petroleum Abstract No:** 832722

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**Author (Inventor):** BLANZ, M; KRUSPE, T; REIDERMAN, A; ROTTENGATTER, P

**Patent Assignee:** BAKER HUGHES INC

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**Patent (Number Kind, Date):** WO 04/001436 A2, 20031231

**Application (Number, Date):** WO, 20030617

**Priority (Number, Date):** US 177618, 20020620  
2003

**Publication Year:** 2003

**IPC Code:** G01R-033/44

**Language:** ENGLISH

**Document Type:** PATENT; P

**Record Type:** ABSTRACT

The use of a material is described having a high **internal magnetostrictive damping** and/or using material with explicitly **low magnetostriction** as an antenna core material for NMR and resistivity devices in a **borehole**. The probe's structural geometry facilitates the use of material, which has a relatively low magnetic permeability. The well logging apparatus has a powdered soft magnetic material core as a flux concentrator for sensing NMR properties within **earth formations** adjacent a **wellbore**.

**Primary Descriptor:** ANTENNA

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**Minor Descriptors:** (P) WORLD; ALLOY; AMORPHOUS; BAKER HUGHES INC; BUSINESS OPERATION; CHART; COMPOUND; DAMPING; DEFORMATION; DETECTION; DETECTOR; DIAGRAM; DIELECTRIC PROPERTY; DRILLING (WELL); ELECTRICAL PROPERTY; ELECTROMAGNETIC FIELD; ELECTROMAGNETIC WAVE; ELECTROMAGNETISM; ELECTRONIC EQUIPMENT; ENGLISH; EQUATION; EQUIPMENT LAYOUT; FERROUS ALLOY; **FORMATION** EVALUATION; FORMING; FREQUENCY; GRAPH; HARDNESS; HYSTERESIS; INDUCTANCE COIL; INSTRUMENT; INTERPRETATION; IRON OXIDE; MAGNETIC DETECTOR; MAGNETIC FIELD; MAGNETIC PERMEABILITY; MAGNETIC RESONANCE; MAGNETISM; MANUFACTURING; MATHEMATICS; MECHANICAL PROPERTY; METAL; MOLDING; MOLECULAR STRUCTURE; NUCLEAR MAGNETIC RESONANCE; OXIDE; PARTICLE SIZE; PATENT; PERMEABILITY; PHYSICAL PROPERTY; RADIO WAVE; RECEIVER (ELECTRONIC); REMOTE SENSING; REMOTE SENSOR; RESONANCE; STAINLESS STEEL; STEEL; STRUCTURE; TRANSMITTER; WAVE; WAVE FREQUENCY; **WELL LOG**; **WELL LOGGING & SURVEYING**; **WELLBORE** DIAGRAM

**Subject Heading:** WELL LOGGING & SURVEYING

*Applicants are work  
JD MA TAF 2/16/2007*

25/9/1 (Item 1 from file: 23) [Links](#)

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0007710227 IP Accession No: 200610-33-43229

# **Strain-induced anisotropy in amorphous alloys and the effect of toroid diameter on magnetic properties**

Becker, J

IEEE Transactions on Magnetics , v 15 , n 6 , p 1939-1945 , Nov. 1979

**Publication Date:** 1979

**Publisher:** Institute of Electrical and Electronics Engineers, Inc. , 445 Hoes Ln , Piscataway , NJ , 08854-1331

**Country Of Publication:** UK

**Publisher Url:** <http://iee.org.uk>

**Publisher Email:** [inspec@ieee.org](mailto:inspec@ieee.org)

**Document Type:** Journal Article

**Record Type:** Abstract

**Language:** English

**ISSN:** 0018-9464

**File Segment:** Metadex

*NA TAP 2/6/2007*

## **Abstract:**

The magnetic properties of toroids wound from amorphous Fe-B-Si alloy ribbons has been examined as a function of toroid diameter and for ribbon widths from 0.1 cm to 2.5 cm. For the smallest ribbon widths, as the diameter decreased from 20 cm to 1 cm, the magnetic coercivity before annealing increased by a factor of ten and the remanence-to-saturation ratio decreased from ~0.7 to less than 0.4. After annealing in a field, the coercivity still increased with decreasing diameter by a factor of ten and the ratio of remanence-to-saturation dropped from ~0.9 to ~0.45. The losses after annealing similarly increased by a factor of ten and the permeability decreased. These lowest losses, obtained from large diameter toroids, are below those of the best commercial alloys (Supermalloy, 4-79 Mo-Permalloy, and Deltamax) and are well below any previously reported amorphous alloy. Toroids made from wider tapes, 1 cm and 2.5 cm in width, of similar Fe-B-Si compositions, were found to have properties essentially independent of their diameter. This difference in behavior between narrow and wide tapes can be understood on the basis of their differences in strain distribution. The approach to saturation after annealing was found to improve with increasing nickel in the amorphous alloys Fe(x)Ni(80-x)B(20). This is attributed to the decrease in **magnetostriction** which **decreased** the anisotropy arising from strain induced ordering. This assumption was confirmed when it was noted that the approach to saturation became much easier when the **inner** half of the thickness of an annealed toroid tape was etched away removing material with annealed in strain induced ordering. The impairment in properties of toroids with decrease in diameter is thus attributed to the increase in the strain induced ordering anisotropy. In order to eliminate the effect of toroid diameter on the magnetic properties we wound the toroids with sufficient tension to overcome the compressive forces developed in the tapes due to their radius of curvature. Rather than improving the properties, winding with tension significantly deteriorated the properties. This is believed to be due to the radial forces introduced by the winding tension. The effects- of tensional loads and of compressive loads on the **surface** of straight ribbons were studied and confirmed the results obtained in the toroids.

**Descriptors:** Toroids; Annealing; Ribbons; Magnetic properties; Amorphous alloys; Metallic glasses; Order disorder; Strain; Anisotropy; Saturation; Winding; Loads (forces); Coercive force; Coercivity; Iron; Molybdenum base alloys; Strain distribution; Permeability; Ferrous alloys; Impairment  
**Subj Catg:** 33, Electrical and Magnetic Phenomena

25/9/2 (Item 1 from file: 987) [Links](#)

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0001787304 **Petroleum Abstract No:** 832722

**ANTENNA CORE MATERIAL FOR USE IN MWD [MEASURING-WHILE-DRILLING] RESISTIVITY MEASUREMENTS AND NMR [NUCLEAR MAGNETIC RESONANCE] MEASUREMENTS**

**Author (Inventor):** BLANZ, M; KRUSPE, T; REIDERMAN, A; ROTTENGATTER, P

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**Patent (Number Kind, Date):** WO 04/001436 A2, 20031231

**Application (Number, Date):** WO, 20030617

**Priority (Number, Date):** US 177618, 20020620  
2003

**Publication Year:** 2003

**IPC Code:** G01R-033/44

**Language:** ENGLISH

**Document Type:** PATENT; P

**Record Type:** ABSTRACT

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**Subject Heading:** WELL LOGGING & SURVEYING

*MA Apprpts an work TAF  
2/16/2007*

25/9/3 (Item 1 from file: 292) [Links](#)

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00105414      **Supplier Number** 0424344

**Theoretical analysis of thermomagnetic properties, low- temperature hysteresis and domain structure of titanomagnetites.**

Clark D.A.; Schmidt P.W.

**Address:** CSIRO, Div of Min Phys, PO Box 136, N Ryde, NSW 2113, Australia.

Physics of the Earth & Planetary Interiors , 30/4 (300-316) , 1982

**Document Type:** Journal

**Languages:** English

**Figures:** 5 figs, table, 51 refs.

We have examined theoretically the effects of thermal agitation on the low- and high-field thermomagnetic curves and find that observed Curie temperatures in general represent an **intrinsic** property of the magnetic mineral present, rather than reflecting thermal agitation. The high coercive force and relative remanence at low temperatures for titanomagnetites having  $x > 0.5$  can be explained on the basis of the interaction of domain walls with crystal defects when the large increases in magnetocrystalline anisotropy and **magnetostriction** with **decreasing** temperature are taken into account. We discuss the evidence for the existence of domain walls in coarse-grained unlvospinel-rich titanomagnetites and conclude that multidomain structure is **well** established. It is also shown that fine titanomagnetite grains may have more than one blocking temperature. In any temperature interval for which superparamagnetic grains are present they will disproportionately influence susceptibility and low-field hysteresis.-from Authors

**Classification Code And Description:**

72.10 (STRUCTURAL GEOLOGY AND TECTONICS)

72.11 (GEOPHYSICS)

72.12 (SEISMOLOGY)

**Record History:**

COMPLETED RECORD - January 1, 1983

N/A TAF 2/16/2007

27/9/1 (Item 1 from file: 987) [Links](#)

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0001787304 **Petroleum Abstract No:** 832722

**ANTENNA CORE MATERIAL FOR USE IN MWD [MEASURING-WHILE-DRILLING] RESISTIVITY MEASUREMENTS AND NMR [NUCLEAR MAGNETIC RESONANCE] MEASUREMENTS**

**Author (Inventor):** BLANZ, M; KRUSPE, T; REIDERMAN, A; ROTTENGATTER, P

**Patent Assignee:** BAKER HUGHES INC

**Patent Information:** World 04/001,436A2, p. 12/31/2003, f. 6/17/2003, pr. U.S. 6/20/2002 (Appl. 177,618) (G01R-033/44). (37 pp; 50 claims)

**Patent (Number Kind, Date):** WO 04/001436 A2, 20031231

**Application (Number, Date):** WO, 20030617

**Priority (Number, Date):** US 177618, 20020620  
2003

**Publication Year:** 2003

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**Language:** ENGLISH

**Document Type:** PATENT; P

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**Subject Heading:** WELL LOGGING & SURVEYING

*N/A Applicant's own Work TAF  
2/16/2007*

27/9/2 (Item 1 from file: 103) [Links](#)

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04167662 AIX-28-024191; EDB-97-076366

**Title: Global properties of low and high energy magnetic excitations in deformed nuclei**

**Author(s):** Iudice, N. Lo (Istituto Nazionale di Fisica Nucleare, Naples (Italy))

**Title: Fifteenth international workshop on nuclear theory. Rila Mountains, Bulgaria, June 10-15, 1996.**

# **Abstracts**

**Corporate Source:** Syyuz na Nauchnite Rabotnitsi v Bylgariya, Sofia (Bulgaria) Bylgarska Akademiya na Naukite, Sofia (Bulgaria). Inst. za Yadrena Izsledvaniya i Yadrena Energetika Sofia Univ. (Bulgaria). Fizicheski Fakultet (Code: 6062240; 1048300; 5828650 )

**Conference Title:** 15. international workshop on nuclear theory

**Conference Location:** Gyulechitsa (Bulgaria) **Conference Date:** 10-15 Jun 1996

**Publication Date:** 1996 p 15 . (21 p)

**Report Number(s):** INIS-mf-15514 CONF-9606307--

**Order Number:** DE97623702

**Document Type:** Miscellaneous Analytic; Conference Literature; Numerical Data

**Language:** English

**Journal Announcement:** EDB9712

**Availability:** OSTI; NTIS (US Sales Only); INIS

**Subfile:** ERA (Energy Research Abstracts); ETD (Energy Technology Data Exchange) . INIS (non-US Atomindex input AIX)

**US DOE Project/NonDOE Project:** NP

**Country of Origin:** Italy

**Country of Publication:** Bulgaria

**Abstract:** Low- and high-energy magnetic dipole excitations, known as scissors modes, are studied in schematic proton-neutron quasi-particle random phase approximation using a Hartree-Fock mean field obtained self-consistently from a separable quadrupole-quadrupole interaction. It is shown that the Hartree mean field allows to separate exactly the redundant rotational mode from the physical **intrinsic** states. The separation remains exact even if pairing correlations are accounted for. The formalism can be exploited to deduce unweighted sum-rules which connect the M1 to the E2 transition strengths of each M1 mode. The relevance of these new M1-E2 relations to the study of the mode in deformed as well as in super-deformed nuclei is stressed. An energy weighted M1 sum-rule of general validity is finally deduced and computed using the Hartree mean field. It is shown that restoring the spherical symmetry of the Hamiltonian is crucial for a correct computation of such a sum-rule. This sum enables to relate the M1 transition strengths to the quadrupole collectivity of the deformed ground state in agreement with the observed deformation properties of the low-energy mode. Unweighted and weighted sum-rules are largely model independent estimates of the summed M1 strengths of both low and high energy M1 excitations. 3 refs. (author).

**Major Descriptors:** \*DEFORMED NUCLEI -- EXCITED STATES

**Descriptors:** E2-TRANSITIONS; M1-TRANSITIONS; SUPERDEFORMED NUCLEI; THEORETICAL DATA

**Broader Terms:** DATA; DEFORMED NUCLEI; ENERGY LEVELS; ENERGY-LEVEL TRANSITIONS; INFORMATION ; MULTIPOLE TRANSITIONS; NUCLEI; NUMERICAL DATA

**Subject Categories:** 663110\* -- General & Average Properties of Nuclei & Nuclear Energy Levels -- (1992-)

663120 -- Nuclear Structure Models & Methods -- (1992-)

663220 -- Electromagnetic Transitions -- (1992-)

**INIS Subject Categories:** G3110\* -- General & average properties of nuclei & nuclear energy levels -- (1992-)  
G3120 -- Nuclear structure models & methods -- (1992-)  
G3220 -- Electromagnetic transitions -- (1992-)

N/A TAF 2/16/2007



31/9/1 (Item 1 from file: 6) [Links](#)

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**Allison Method of Chemical Analysis**

( Final technical rept., Apr-Dec 65 )

Mildrum, H. F. ; Schmidt, B. M.

Dayton Univ Ohio Research Inst

**Corporate Source Codes:** 105400

**Report Number:** UDRI-TR-106; AFAPL-TR-66-52

May 66 2p

**Journal Announcement:** USGRDR6614

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**NTIS Prices:** PC A02/MF A01

**Contract Number:** AF 33(657)-9175; AF-8119

The report describes the theoretical study and experimental circuit investigations conducted on the Allison effect **apparatus** used for chemical **analysis**. The inherent electrical behavior of an Allison effect apparatus was **well** defined by using modern high speed oscillographic techniques and frequency selective equipment. A continuous radio frequency spectrum characterized by numerous resonances rapidly diminishes into the noise level at 4000 megahertz. A theoretical **analysis** of the **apparatus** generated a valid equivalent circuit model. A review of the extensive data indicates that the Allison effect apparatus functions primarily as a phase comparator for radio frequencies in the 30 to 100 megahertz range. An rf-optical interaction in the cells, possibly by means of the Cotton-Mouton effect, is thought to produce a characteristic light modulation effect when phase matching occurs. (Author)

**Descriptors:** \*Chemical analysis; \*Magneto-optic effect; Instrumentation; Test equipment; **Electrical properties**; Radiofrequency spectroscopy; Circuits; Theory; Coils; **Electromagnetic** pulses; Calibration

**Identifiers:** Allison effect

**Section Headings:** 99D (Chemistry--Basic and Synthetic Chemistry); 70B (Administration and Management--Management Practice)

N/A TAF 2/16/2007

31/9/2 (Item 1 from file: 23) [Links](#)

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0005427136 IP Accession No: A97-19975

**Study on electrical and photoelectrical behaviour of thin films of allyl viologen (AV) in PVA matrix**

Sharma, G D; Sangodkar, S G; Roy, M S JNV Univ., Jodhpur, India [Sharma

Journal of Materials Science: Materials in Electronics, v 8, n 1, p 47-55, Feb. 1997

**Publication Date:** 1997

**Publisher:** Kluwer, 101 Philip Drive, Norwell, MA, 02061

**Country Of Publication:** USA

**Publisher Url:** <http://www.wkap.nl/>

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**Conference:**

, UNITED KINGDOM

**Document Type:** Journal Article

**Record Type:** Abstract

**Language:** ENGLISH

**ISSN:** 0957-4522

**No. Of Refs.:** 34

**File Segment:** Aerospace & High Technology

**Abstract:**

Allyl viologen (AV) was synthesized by cross-coupling reaction between allyl bromide and 4,4'-bipyridine in acetonitrile solvent. Optical properties were studied in the region 200-800 nm. Two types of electronic transition were seen, one under the influence of an electric field and another by thermal excitation, in the blue and green regions, respectively. A cyclic voltammogram, recorded in aqueous KCl solvent systems, shows the existence of two redox centers in the molecular system. **Electrical** and photoelectrical **properties** of an Al-AV-ITO sandwich **device** were **analyzed**. J-V and C-V measurements reveal the formation of a Schottky barrier at the Al-AV interface. Action spectra of the device, absorption spectra of the allyl viologen, as well as J-V and C-V characteristics confirm that the allyl viologen behaves as a p-type organic semiconductor. Various electrical and photoelectrical parameters are calculated and discussed in detail. (Author)

**Descriptors:** \*Electrical properties; \*Photoelectricity; \*Thin films; \*Pyridines; Schottky diodes; Electromagnetic absorption; Capacitance-voltage characteristics

**Subj Catg:** 33, ELECTRONICS AND ELECTRICAL ENGINEERING

N/A TAF 2/16/2007

31/9/3 (Item 2 from file: 23) [Links](#)

CSA Technology Research Database

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0000833915 IP Accession No: N72-16641

**Arc motion and modes in a homopolar device (Analysis of geometrical flow and Hall effects on dynamic behavior of electric arc in homopolar device for constant current and magnetic field) [Final Report, Sep. 1967 - Aug. 1969]**

NOESKE, H O

Pages: 105P

Publication Date: 1971

Conference:

, United States

Document Type: Report

Record Type: Abstract

Language: English

Report No: AD-731803; ARL-71-0139; Pagination 105P

Numbers: Contract: F33615-67-C-1344; AF PROJ. 7063

File Segment: Aerospace & High Technology

**Abstract:**

The observed modes and the dynamic behavior of an electric arc in a homopolar device for constant current (100A) and magnetic field (1,500G) are quantitatively dependent on the type of gas (He, Ne, Ar, Xe). The peculiar behavior of the arc for both electrode polarities can be explained as a result of a competition between geometrical flow effects and the Hall effect, with the latter becoming more pronounced with decreasing pressure. The well known tendency of the cathode spot to move into the retrograde direction at low pressures under the influence of a transversal magnetic field seems only of secondary importance. No steady retrograde motion of the arc column has been observed. The Hall voltage is used to explain quantitatively the measured dynamic arc voltage as function of pressure. For all gases investigated the measured Hall parameter ( $10^{-4}$ ) is given as function of pressure and roughly proportional to  $1/p$ . Also, the arc rotational frequency as function of  $1/pM$  ( $p$ =gas pressure  $M$ =atomic weight) can be plotted as one curve, which suggests that for lower pressure the main loss is kinetic energy of the rotating gas which has to be replaced by the **electromagnetic** energy of the rotating arc. In summary, two distinct arc modes for low gas pressures can be defined depending on electrode polarity: when the center electrode is cathode, the filamented current carrying arc moves together with the gas at high azimuthal velocity in amperian direction; when the center electrode is anode the discharge becomes diffuse and stationary in regard to the laboratory and pumps the plasma with high speed in the azimuthal amperian direction.

**Descriptors:** \*Gas flow; \*Hall effect; \*Magnetohydrodynamics; \*Plasma diagnostics; Electric arcs; **Electrical properties**; Magnetic fields; Test equipment

**Subj Catg:** 25, Physics, Plasma

NA Ref 2/16/2007

35/9/1 (Item 1 from file: 94) [Links](#)

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JICST-EPlus

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05313684 JICST Accession Number: 03A0033980 File Segment: JICST-E

**Preparation and Evaluation of Fracture Resistance for Glass -Ceramic/Metal Composites.**

TOYODA MITSUHIRO (1); SHIONO TAKESHI (1); NISHIDA TOSHIHIKO (1)

(1) Kyoto Inst. Technol., Faculty of Engineering and Design, JPN

Zairyo (Journal of the Society of Materials Science, Japan) , 2002 , VOL.51,NO.12 , PAGE.1392-1399 , FIG.14, TBL.2, REF.10

Journal Number: F0385ABI ISSN: 0514-5163 CODEN: ZARYA

Universal Decimal Classification: 539.42:666

Language: Japanese Country of Publication: Japan

Document Type: Journal

Article Type: Original paper

Media Type: Printed Publication

**Abstract:** .BETA.-spodumene glass-ceramics containing 30vol% Ni or 30vol% Co were prepared. Their mechanical properties were studied in comparison with the glass and monolithic glass-ceramics with different mean grain size. The R-curve behavior and the COD (Crack Opening Displacement) profiles for these composites were evaluated and the mechanism for fracture resistance was examined. For the composite containing Co, fracture resistance showed remarkable R-curve behavior from  $K_{I0}=1.6\text{MPa}\cdot\text{m}^{1/2}$  to  $K_R=4.0\text{MPa}\cdot\text{m}^{1/2}$  within short crack extension of 1.0mm. The composite was notably toughened. This result was discussed in terms of the microstructure. The COD measurements in glass showed that the interaction between fracture surfaces was not observed. In the COD profiles of glass-ceramic/metal composites and monolithic glass -ceramics, on the other hand, the experimental values were found to be lower than the theoretical values (Irwin parabola) near the crack tip because the interaction enhanced. Especially, it was obvious that external stress shielding effects acted more strongly near the crack tip in glass-ceramic/metal composites. The increase in the grain size and addition of metal were found to enhance the interaction between fracture surfaces. The relationship between the applied stress intensity ( $K_{appl}$ ) and the stress intensity at the tip of crack ( $K_{tip}$ ) as a function of  $K_{appl}/K_{IC}$  indicated that metal particles acted as elastic bridging elements in glass-ceramic/metal composites. The size of bridging zone in COD profile for each specimen was clarified to correspond to that of rising extension in R-curve. (author abst.)

**Descriptors:** glass-ceramics; crystallization; metal powder; composite material; fracture toughness; aluminosilicate glass; pyroxene; crack opening displacement; R curve; brittleness; fracture surface; interaction; stress(mechanics); shielding; micro structure; crosslinking; elasticity(mechanical property); nickel; cobalt; X-ray diffraction; Young's modulus; scanning electron microscope; particle size(diameter); fracture testing; crack tip; fracture energy

**Broader Descriptors:** glass; ceramics; modification; metallic material; powder; particulate object; material; toughness; mechanical property; property; silicate glass; inosilicate mineral; silicate mineral; mineral(geology); phenomena in strength of material; phenomenon; displacement(transfer); transfer; curve; line; face; structure; polymer reaction; chemical reaction; fourth row element; element; iron group element; transition metal; metallic element; X-ray scattering; electromagnetic wave scattering; scattering; diffraction; coherent scattering; elastic modulus; coefficient; ratio; electron microscope; microscope; diameter; length; geometric quantity; material testing; test; edge; part; energy

Classification Codes: HC04040H

N/A TAF 2/11/2007

35/9/2 (Item 2 from file: 94) [Links](#)

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02188292 JICST Accession Number: 93A0922152 File Segment: JICST-E

**Crystal structure change by mixing agitation and material synthesis.**

SAITO FUMIYOSHI (1)

(1) Tohoku Univ.

Kagaku Kogakkai Shuki Taikai Kenkyu Happyo Koen Yoshishu , 1993 , VOL.26th,NO.Pt 1 , PAGE.412-414 , FIG.5, REF.12

**Journal Number:** L0827AAY

**Universal Decimal Classification:** 66.065 666.5/.6

**Language:** Japanese **Country of Publication:** Japan

**Document Type:** Conference Proceeding

**Article Type:** Commentary

**Media Type:** Printed Publication

**Abstract:** Research by the authors on crystal structure change of **powder** by crushing and the mechanism is arranged. Outline of research results on generation of mechanochemical activity and crystal structure change referring talc (product observation by SEM, analyses of relation between local structure change and amorphatisation by crushing and micro configuration of atoms by X-ray diffraction method), and crushing effect and quantitative **evaluation** of the **mechanism** for amorphous state in ceramic material (mullite) synthesis by thermal analysis, etc. are explained.

**Descriptors:** grinding and milling; **powder**; crystal structure; structure analysis; X-ray diffraction; structural phase transition; mixing; mechanochemistry; ceramics; mullite; **glass** transition; talc

**Broader Descriptors:** particulate object; structure; analysis; X-ray scattering; **electromagnetic** wave scattering; scattering; diffraction; coherent scattering; phase transition; physical chemistry; chemistry; natural science; science; subsilicate mineral; nesosilicate mineral; silicate mineral; mineral(geology); phyllosilicate mineral

**Classification Codes:** XD03021O; YC03020V

MA TGF 2/16/2007

35/9/3 (Item 1 from file: 103) [Links](#)

Energy SciTec

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04166574 JPN-97-004245; EDB-97-075278

**Title:** Application of the beta-ray absorption method to the measurement of particles in the air

**Author(s):** Ise, Hiroaki; Nakamura, Masaru; Maeno, Tomokazu; Tanizaki, Yoshiyuki (Tokyo Metropolitan Isotope Research Center (Japan))

**Source:** Tokyo-Toritsu Aisotopu Sogo Kenkyusho Kenkyu Hokoku v 13 . **Coden:** TASHEK **ISSN:** 0289-6893

**Publication Date:** Mar 1996 p 79-88

**Document Type:** Journal Article

**Language:** Japanese

**Journal Announcement:** EDB9712

**Subfile:** ETD (Energy Technology Data Exchange) . JPN (Japan (sent to DOE from))

**US DOE Project/NonDOE Project:** NP

**Country of Origin:** Japan

**Country of Publication:** Japan

**Abstract:** With a view to facilitating the application of the micro-mass measuring technology which utilizes the beta-ray absorption method to the field of measurement of particles in the air, we have developed a multipurpose device to capture and evaluate the particles. It is applicable to a wide range of measurement of particles such as suspended particulate matters (SPM), dust falls and source particles. We have also made a study on its performance. As a result of our study on the material of the filter, which was carried out to improve the accuracy of measurement by beta-ray absorption method taking into consideration the application of such methods as the component analysis by PIXE, it was clarified that the combination of the polycarbonate membrane filter and the glass fiber filter coated with Teflon is excellent in performance. Moreover we also made a study on a simple measuring method of SPM, which will make it possible to measure the mass concentration of captured SPM even if its amount is very small, based on the data obtained by the automatic measuring device which is always monitoring one hour value of mass concentration of SPM through the beta-ray absorption method. As a result, we found that the combined method of the beta-ray absorption method the laser light scattering method and the filtration capturing/color differential method is excellent. So, we suggested a new measuring method derived from the color differential method and the sensual evaluation method. It will make it possible to measure SPM with an accuracy in the order of microgram. (author)

**Major Descriptors:** \*ENVIRONMENTAL MATERIALS -- BETA RADIOGRAPHY

**Descriptors:** AEROSOLS; AIR SAMPLERS; FILTERS; LASER RADIATION; SENSITIVITY; TRACE AMOUNTS

**Broader Terms:** COLLOIDS; DISPERSIONS; ELECTROMAGNETIC RADIATION; EQUIPMENT; INDUSTRIAL RADIOGRAPHY; MATERIALS; RADIATIONS; SAMPLERS; SOLS

**Subject Categories:** 540111\* -- Environment, Atmospheric -- Basic Studies -- Radiometric Techniques -- (1990-)

N/A TAF 2/16/2007

35/9/4 (Item 2 from file: 103) Links

Energy SciTec

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03204736 CHF-91-0F1140; EDB-91-132172

**Title:** Fabrication of CdTe solar cells by laser-driven physical vapor deposition

**Author(s):** Compaaan, A.; Bhat, A.; Tabory, C.; Liu, S.; Nguyen, M.; Aydinli, A.; Tsien, L.H.; Bohn, R.G. (Toledo Univ., OH (USA). Dept. of Physics and Astronomy)

**Conference Title:** 10. Solar Energy Research Institute (SERI) photovoltaic advanced research and development project review meeting

**Conference Location:** Lakewood, CO (United States) **Conference Date:** 23-25 Oct 1990

**Source:** Solar Cells (Switzerland) v 30:1-4 . **Coden:** SOCLD **ISSN:** 0379-6787

**Publication Date:** May 1991 p 79-88

**Report Number(s):** CONF-9010117--

**Contract Number (Non-DOE):** SERI ZN-0-1919-3

**Document Type:** Journal Article; Conference Literature

**Language:** In English

**Journal Announcement:** EDB9120

**Subfile:** ETD (Energy Technology Data Exchange) .

**US DOE Project/NonDOE Project:** NP

**Country of Origin:** United States

**Country of Publication:** Switzerland

**Abstract:** Polycrystalline cadmium sulfide-cadmium telluride heterojunction solar cells were fabricated for the first time using a laser-driven physical vapor deposition method. An XeCl excimer laser was used to deposit both of the II-VI semiconductor layers in a single vacuum chamber from pressed **powder** targets. Results are presented from optical absorption. Raman scattering, X-ray diffraction, and electrical characterization of the films. Solar cells were fabricated by deposition onto SnO<sub>2</sub>-coated **glass** with top contacts produced by gold evaporation. **Device** performance was **evaluated** from the spectral quantum efficiency and current-voltage measurements in the dark and with air mass 1.5 solar illumination. (orig.).

**Major Descriptors:** \*CADMIUM TELLURIDE SOLAR CELLS -- LASER RADIATION; \*CADMIUM TELLURIDE SOLAR CELLS -- PHYSICAL VAPOR DEPOSITION; \*CADMIUM TELLURIDE SOLAR CELLS -- VACUUM EVAPORATION

**Descriptors:** CADMIUM SULFIDE SOLAR CELLS; CRYSTAL GROWTH; ELECTRIC CONDUCTIVITY; ELECTRICAL TESTING; POLYCRYSTALS; TEMPERATURE DEPENDENCE; THIN FILMS; TIN OXIDES

**Broader Terms:** CHALCOGENIDES; CRYSTALS; DEPOSITION; DIRECT ENERGY CONVERTERS; ELECTRICAL PROPERTIES; **ELECTROMAGNETIC** RADIATION; EQUIPMENT; EVAPORATION; FILMS ; MATERIALS TESTING; NONDESTRUCTIVE TESTING; OXIDES; OXYGEN COMPOUNDS; PHASE TRANSFORMATIONS; PHOTOELECTRIC CELLS; PHOTOVOLTAIC CELLS; PHYSICAL PROPERTIES; RADIATIONS; SOLAR CELLS; SOLAR EQUIPMENT; SURFACE COATING; TESTING; TIN COMPOUNDS

**Subject Categories:** 140501\* -- Solar Energy Conversion -- Photovoltaic Conversion

N/A TAF 2/16/2009

39/9/2 (Item 1 from file: 94) [Links](#)

Fulltext available through: [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#)

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05378020 JICST Accession Number: 03A0178570 File Segment: JICST-E

**Electrical Steels Having Excellent Punchability for Compact and High-functional Automotive Electrical Components.**

KONO MASAOKI (1); SENDA KUNIHIRO (1); HAYAKAWA YASUYUKI (1)

(1) Kawasaki Steel Corp., Tech. Res. Inst., JPN

Kawasaki Seitetsu Giho (Kawasaki Steel Giho) , 2003 , VOL.35,NO.1 , PAGE.1-6 , FIG.14, TBL.1, REF.17

**Journal Number:** G0980AAD **ISSN:** 0368-7236 **CODEN:** KWSGB

**Universal Decimal Classification:** 669:621.96/.98 621.318.1

**Language:** Japanese **Country of Publication:** Japan

**Document Type:** Journal

**Article Type:** Original paper

**Media Type:** Printed Publication

**Abstract:** The punchability of an electrical steel sheet and magnetic property with strain induced by punching were evaluated. Insulation coatings have much influence on the operating life of a stamping die. Inorganic-organic coating "A coating" has better punchability than inorganic coating "D coating", and self-adhesive type organic coating "B coating" has excellent punchability. The operating life of a stamping die is shortened with the increase of hardness of steel sheets. On the other hand, the **deterioration of magnetic** property with induced strain is restrained in a thinner and harder material. RMHE and RMHF series consist of good punchability, high flux density, low iron loss and low **hysteresis** loss and therefore they are suitable for driving motors and EPS motors. Newly developed **glass-less grain-oriented** electrical steel "RGE" has better punchability and magnetic anisotropy than conventional steels and accordingly, it is expected to be applicable to segmentalized motors. (author abst.)

**Descriptors:** silicon steel; blanking quality; strain; magnetic property; iron loss; **magnetic core**; film(cover); magnetic flux density; electric equipment

**Broader Descriptors:** steel; iron and steel; metallic material; magnetic alloy; alloy; magnetic material; material; formability; workability(machining); property; electrical loss; loss; magnetic component; parts; membrane and film; magnetic flux; flux; density

**Classification Codes:** WC04050H; NA04040H

N/A TAF 2/16/2007



39/9/3 (Item 2 from file: 94) [Links](#)

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03791393 JICST Accession Number: 98A0971063 File Segment: JICST-E

**Effect of Stress on Apparent Magnetic Permeability of Sputtered Ni Film.**

IINO YUTAKA (1); HONDA FUMIHIRO (1); TSUCHIDA NUIO (1)

(1) Toyota Technol. Inst.

Nippon Kikai Gakkai Zenkoku Taikai Koen Ronbunshu , 1998 , VOL.76th,NO.Vol.1 , PAGE.371-372 , FIG.3, TBL.1, REF.1

**Journal Number:** X0587AAL

**Universal Decimal Classification:** 620.179:669 531.71/.74

**Language:** Japanese **Country of Publication:** Japan

**Document Type:** Conference Proceeding

**Article Type:** Short Communication

**Media Type:** Printed Publication

**Abstract:** Ni (99.99%) was sputtered on the specimens of non-magnetic materials ( glass and 2024-T3 Al alloy). The sputtered glass specimens were elastically bended by four-point-bend. The apparent magnetic permeability .MU.a of the sputtered Ni was measured using a high-sensitive permeability meter. The .MU.a decreases linearly with increasing tensile bending stress. The .MU.a of the sputtered Ni on the specimen polished with 0.5.MU.m Al<sub>2</sub>O<sub>3</sub> powder decreases also with tensile stress, while that on the specimens polished with SiC emery paper of #1500 and #320 did not change by the tensile stress. The roughness of the surface was found to be important factor for stress dependency of .MU.a of the sputtered Ni. (author abst.)

**Descriptors:** metallic thin film; nonmagnetic steel; magnetic field measuring inspection; strain gauge; magnetic permeability; stress measurement; surface roughness; sputtered deposition; tensile stress

**Broader Descriptors:** metal; thin film; membrane and film; steel; iron and steel; metallic material; magnetic inspection; electromagnetic test; nondestructive inspection; inspection; measuring instrument; magnetic property; ratio; measurement; surface quality; flatness(property); property; physical vapor deposition; vapor deposition; axial stress; stress(mechanics)

**Classification Codes:** HB02030F; AD050200

N/A TAF 2/1/6/2007

39/9/4 (Item 3 from file: 94) Links

JICST-EPlus

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03482142 JICST Accession Number: 98A0073301 File Segment: JICST-E

**Development of magnetic cores utilizing magneto-elastically induced anisotropy.**

IKEZOE HIROAKI (1); NAKANO MASAKI (1); FUKUNAGA HIROTOSHI (1)

(1) Nagasaki Univ.

Denki Gakkai Magunetikkusu Kenkyukai Shiryo , 1997 , VOL.MAG-97,NO.198-207 , PAGE.7-11 , FIG.12, REF.7

**Journal Number:** Z0924AAQ

**Universal Decimal Classification:** 621.318.1

**Language:** Japanese **Country of Publication:** Japan

**Document Type:** Conference Proceeding

**Article Type:** Original paper

**Media Type:** Printed Publication

**Abstract:** Magnetic core with the permeability of about 150 were prepared by annealing Metglas 2605S3A ribbons in an O<sub>2</sub> or N<sub>2</sub> atmosphere, and effect of DC-bias field on their magnetic properties was studied. The atmosphere during annealing did not affect resultant magnetic properties of the cores, and the low permeability was estimated to be achieved by the partial crystallization and the resultant change in magnetization mode to the magnetization rotation mode. The amount of crystallized part was estimated to be about 15% in weight. A decrease in AC-permeability due to an application of DC-bias field was smaller than that of a Mn-Zn ferrite core with airgap (.MU.=120) but larger than that of a Mo permalloy powder core (.MU.=130). The core loss, which is comparable with that of an amorphous cut core (.MU.=200) and a sendust powder core (.MU.=100), decreased with increasing the magnitude of DC-bias field at low frequencies such as 10kHz and increased at high frequencies such as 150kHz. This increase may be attributed to in-plane eddy current loss at high frequencies. (author abst.)

**Descriptors:** magnetic core; magnetic permeability; choke coil; amorphous magnetic material; iron base alloy; magnetic anisotropy; heat treatment; atmosphere(environment); oxygen; nitrogen; crystallization; iron loss; magnetostriction

**Broader Descriptors:** magnetic component; parts; magnetic property; ratio; inductor; circuit component; magnetic substance; magnetic material; material; amorphous state ; glassy state; solid(matter); iron and steel; metallic material; anisotropy; property; treatment; environment; oxygen group element; element ; second row element; nitrogen group element; modification; electrical loss ; loss; magnetoelastic effect; magnetomechanical effect; magnetic field effect; effect

**Classification Codes:** NA04040H

TAF 2/16/2007

39/9/5 (Item 1 from file: 34) [Links](#)

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SciSearch(R) Cited Ref Sci

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04244928 **Genuine Article#:** RR107 **Number of References:** 50

**NANOCRYSTALLINE SOFT-MAGNETIC FE-M-B (M=Zr, Hf, Nb) ALLOYS PRODUCED BY CRYSTALLIZATION OF AMORPHOUS PHASE (OVERVIEW)**

**Author:** MAKINO A; INOUE A; MASUMOTO T

**Corporate Source:** ALPS ELECT CO LTD,CENT RES LAB,NAGAOKA BRANCH/NAGAOKA/NIIGATA 940/JAPAN/; TOHOKU UNIV,INST MAT RES/SENDAI/MIYAGI 98077/JAPAN/

**Journal:** MATERIALS TRANSACTIONS JIM , 1995 , V 36 , N7 ( JUL ) , P 924-938

**ISSN:** 0916-1821

**Language:** ENGLISH **Document Type:** ARTICLE

**Geographic Location:** JAPAN

**Subfile:** SciSearch; CC ENGI--Current Contents, Engineering, Technology & Applied Sciences

**Journal Subject Category:** METALLURGY & METALLURGICAL ENGINEERING; MATERIALS SCIENCE

**Abstract:** This paper reviews our results on the development of a new type of soft magnetic material with high saturation magnetic flux density (B-S) combined with excellent soft magnetic properties. A mostly single bcc structure composed of bcc grains with about 10-20 nm in size surrounded by a small amount of intergranular amorphous layers was obtained by crystallization of amorphous phases prepared by melt-spinning and sputtering technique in Fe-rich regions of Fe-M-B (M=Zr, Nb, Hf) ternary systems. The typical nanocrystalline bcc Fe<sub>90</sub>Zr<sub>7</sub>B<sub>3</sub>, Fe<sub>69</sub>Hf<sub>7</sub>B<sub>4</sub> and Fe<sub>84</sub>Nb<sub>7</sub>B<sub>9</sub> alloys subjected to the optimum annealing exhibit high B, above 1.5 T as well as high effective permeability ( $\mu(c)$ ) at 1 kHz above 20000.

The high B-s for the Fe-M-B alloys is resulting from the high Fe concentrations owing to high glass-forming ability of M(Zr, Hf, Nb) and B. The origin of the good soft magnetic properties for the alloys are listed as follows. (1) The apparent anisotropy is decreased by the combined effects of the formation of the nanoscale bcc structure and the achievement of rather strong magnetic coupling between the bcc grains through the intergranular ferromagnetic amorphous phase. (2) The small saturation magnetostriction ( $\lambda(s)$ ) results from the nonequilibrium bcc phase. The solute-rich inter-granular amorphous phase with high Curie temperature (T-c) and high thermal stability has an important role in the achievement of the good soft magnetic properties through the formation of the nanoscale bcc structure and the attainment of the rather strong magnetic coupling between the bcc grains.

The soft magnetic properties of the nanocrystalline Fe-M-B alloys were improved through the decrease in the bcc grain size and the increase in T-c of the intergranular amorphous phase by optimizing heating rate in the crystallization process and adding small amounts of elements. For example, the improved Fe<sub>84</sub>Zr<sub>3.5</sub>Nb<sub>3.5</sub>B<sub>8</sub>Cu<sub>1</sub> alloy shows the high  $\mu(c)$  of 100000 combined with the high B-s of 1.53 T. This excellent  $\mu(c)$  is comparable to those of nanocrystalline Fe<sub>73.5</sub>Si<sub>13.5</sub>B<sub>9</sub>Nb<sub>3</sub>Cu<sub>1</sub> and the zero-magnetostrictive Co based amorphous alloys, and the high B-s is comparable to those of the Fe based amorphous alloys with good soft magnetic properties. The Fe-M-B based alloys also have very low core losses, the sufficient thermal stability and the low stress-sensibility of the soft magnetic properties. Therefore, the nanocrystalline Fe-M-B alloys are expected as practical magnetic materials for magnetic transformers, inductors, and other devices and parts.

**Descriptors--Author Keywords:** AMORPHOUS ALLOY ; CRYSTALLIZATION ; NANOCRYSTALLINE ; IRON BOSE ALLOY ; MELT-SPUN RIBBON ; SPUTTERED ALLOY FILM ; SOFT MAGNETIC PROPERTY ;

**ZERO-MAGNETOSTRICTION ; SATURATION MAGNETIC FLUX DENSITY ; CORE LOSS**

**Identifiers--** KeyWords Plus: HIGH SATURATION MAGNETIZATION; ULTRAFINE **GRAIN** -STRUCTURE; TRANSITION-METAL ALLOYS; ZR-B; FILMS; SIZE

**Research Fronts:** 93-6357 002 (NANOCRYSTALLINE FE73.5CU1NB3SI13.5B9; AL-CU-MG-AG ALLOY; MAGNETIC LOSSES; CRYSTALLIZATION BEHAVIOR)

**Cited References:**

N/A TAF 2/16/2007

43/9/1 (Item 1 from file: 2) [Links](#)

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10040883

**Title:** Conductivity dependence of seismoelectric wave phenomena in fluid-saturated sediments

**Author** Block, G.I.; Harris, J.G.

**Author Affiliation:** Lawrence Livermore Nat. Lab., Berkeley, CA, USA

**Journal:** Journal of Geophysical Research-Part B-Solid Earth vol.111, no.B1 p. 12 pp.

**Publisher:** American Geophys. Union ,

**Publication Date:** 4 Jan. 2006 **Country of Publication:** USA

**CODEN:** JGREA2 **ISSN:** 0148-0227

**Material Identity Number:** J396-2006-003

**U.S. Copyright Clearance Center Code:** 48-0227/06/2005JB003798\$09.00

**Language:** English **Document Type:** Journal Paper (JP)

**Treatment:** Theoretical (T)

**Abstract:** Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study the **conductivity** dependence of the electrokinetic (EK) effect are described, and outcomes for studies in loose **glass** microspheres and medium-**grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves and (2) the **electromagnetic** waves produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores; this feature is characteristic of poroelastic (Biot) media but is not predicted by either viscoelastic fluid or solid models. A model of plane wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare well to the experimental data for both loose **glass** microspheres and medium-**grain** sand. ( 54 Refs)

**Subfile:** A

**Descriptors:** acoustic waves; fluids; sediments; seismology; terrestrial electricity

**Identifiers:** conductivity dependence; seismoelectric wave phenomena; fluid-saturated sediments; acoustic wave; fluid motion; pore space; electrostatic equilibrium; electric double layer; **grain surfaces**; electrokinetic effect; EK; loose **glass** microspheres ; medium-**grain** sand; NaCl concentration; pore fluid; **electric fields**; fluid-sediment interface; sediment pores; poroelastic media; viscoelastic fluid; plane wave reflection model; EK-Biot theory; NaCl

**Class Codes:** A9125Q (Goelectricity; electromagnetic induction and conductivity); A9160B (Mechanical and acoustic properties of rocks, minerals and soil)

**Chemical Indexing:**

NaCl bin - Cl bin - Na bin (Elements - 2)

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N/A TAF 2/16/2007

43/9/2 (Item 1 from file: 35) [Links](#)

Dissertation Abs Online

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02052032 ORDER NO: AADAA-I3153250

**Coupled acoustic and electromagnetic disturbances in a granular material saturated by a fluid electrolyte**

**Author:** Block, Gareth Ian

**Degree:** Ph.D.

**Year:** 2004

**Corporate Source/Institution:** University of Illinois at Urbana-Champaign ( 0090 )

**Adviser:** John G. Harris

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**Descriptors:** PHYSICS, ACOUSTICS ; APPLIED MECHANICS ; PHYSICAL OCEANOGRAPHY

**Descriptor Codes:** 0986; 0346; 0415

**ISBN:** 0-496-13737-9

The U.S. Navy has an ongoing need for a reliable model of acoustics in ocean sediments. Viscoelastic fluid and solid descriptions are commonly used, but are often unable to account for the variability exhibited by different types of sediments. Poroelasticity (also known as Biot theory) relates the seabed's observed behavior to sediment microstructure and pore-fluid motion explicitly. Traditional acoustical techniques have had difficulty distinguishing between Biot theory predictions and those based on fluid and solid models. Electrokinetic (EK) phenomena—the coupling of relative fluid motion and **grain surface** chemistry—are generated by wave propagation in electrolyte-saturated sediments. The coupled EK-Biot theory developed by Pride (1994) describes how acoustic waves generate **electromagnetic fields**, and simultaneously, how **electromagnetic fields** affect wave behavior.

We devised two reciprocal experiments to study these phenomena. "EK transmission" occurs when an applied voltage creates an electro-acoustic wave; in practice, this leads to thermoelastic motion, as well as electrokinetics, so that we have had to account for both effects. Conversely, "EK reception" occurs when a pressure wave generates a measurable voltage in electrolyte-saturated sediments. The EK reception apparatus made use of a submerged, acoustic transducer to insonify a water-sediment interface with short, 50 kHz sine-wave bursts and chirped **pulses** from 10–800 kHz. The resulting wave motion was monitored using Ag/AgCl electrodes fixed in a vertical array above and below the sediment interface. We measured the **conductivity** dependence of two kinds of EK behavior: (1) voltages generated within the samples that were localized around the **transmitted** "fast" waves, and (2) **electromagnetic** (EM) waves produced at the water-sediment interface. Fast-wave voltages were often greater than 500  $\mu\text{V}$ , while the EM-wave potentials were usually 100  $\mu\text{V}$  in magnitude. A model of plane-wave reflection from a water-EK-Biot interface leads to theoretical predictions that compare very well to experimental data for sand and **glass** microspheres. Both EM- and fast-wave voltages are caused by relative fluid motion in the sediment, a feature that is characteristic of poroelastic media—but not predicted by either fluid or solid models.

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43/9/3 (Item 1 from file: 144) [Links](#)

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Pascal

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17563449 PASCAL No.: 06-0150837

**Conductivity** dependence of seismoelectric wave phenomena in fluid-saturated sediments

BLOCK Gareth I; HARRIS John G

Lawrence Livermore National Laboratory, Livermore, California, United States; Center for Quality Engineering and Failure Prevention, Northwestern University, Evanston, Illinois, United States

Journal: Journal of geophysical research, 2006, 111 (B1)

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Country of Publication: United States

Language: English

Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study the **conductivity** dependence of the electrokinetic (EK) effect are described, and outcomes for studies in loose **glass** microspheres and medium-**grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves and (2) the **electromagnetic** waves produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores; this feature is characteristic of poroelastic (Biot) media but is not predicted by either viscoelastic fluid or solid models. A model of plane wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare **well** to the experimental data for both loose **glass** microspheres and medium-**grain** sand.

English Descriptors: **conductivity**; acoustical waves; equilibrium; **grains**; sand; concentration; pore fluid; **electrical field**; **electromagnetic** waves; interfaces; models; plane waves; wave reflection; theory; lead; prediction

French Descriptors: Conductivite; Onde acoustique; Equilibre; **Grain**; Sable; Concentration; Fluide interstitiel; Champ electrique; Onde

**electromagnetique**; Interface; Modele; Onde plane; Reflexion onde;  
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**Conductivity dependence of seismoelectric wave phenomena in fluid-saturated sediments**

**Author:** Block GI (REPRINT) ; Harris JG

**Corporate Source:** Lawrence Livermore Natl Lab, 7000 E Ave, L-206/Livermore//CA/94566 (REPRINT); Lawrence Livermore Natl Lab, Livermore//CA/94566; Northwestern Univ, Ctr Qual Engrg & Failure

Prevent, Evanston//IL/60208 ( block4@llnl.gov )

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**ISSN:** 0148-0227 **Publication date:** 20060119

**Publisher:** AMER GEOPHYSICAL UNION , 2000 FLORIDA AVE NW, WASHINGTON, DC 20009 USA

**Language:** English **Document Type:** ARTICLE

**Geographic Location:** USA

**Journal Subject Category:** GEOCHEMISTRY & GEOPHYSICS

**Abstract:** [1] Seismoelectric phenomena in sediments arise from acoustic wave - induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study the **conductivity** dependence of the electrokinetic (EK) effect are described, and outcomes for studies in loose **glass** microspheres and medium-**grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: ( 1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves and ( 2) the **electromagnetic** waves produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores; this feature is characteristic of poroelastic ( Biot) media but is not predicted by either viscoelastic fluid or solid models. A model of plane wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare **well** to the experimental data for both loose **glass** microspheres and medium-**grain** sand.

**Identifiers--** KeyWord Plus(R): POROUS-MEDIA; MARINE-SEDIMENTS; ACOUSTIC PROPAGATION; FIELD-MEASUREMENTS; POROELASTIC MEDIA; POINT SOURCES; ATTENUATION; MODEL; FLOW; CONVERSIONS

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43/9/5 (Item 1 from file: 23) **Links**

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# **COMPARISON OF ELECTROMAGNETIC SHIELDING IN GFR-NANO COMPOSITES**

Jung, Woo-Kyun; Won, Myong-Shik; Ahn, Sung-Hoon Seoul National University of Korea 301B/D 1255-1, San56-1, Shinlim, Kwanak, Seoul, Korea, 151-742

Ceramic Engineering and Science Proceedings , v 26 , n 8 , p 363-371 , 2005

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## **Abstract:**

The research on **electromagnetic** shielding has been advanced for military applications as well as for commercial products. Utilizing the reflective properties and absorptive properties of shielding material, the replied signal measured at the rear **surface**, or at the signal source can be minimized. The shielding effect was obtained from such materials that have high absorptive properties and structural characteristics, for example stacking sequence. In this research { **glass fiber** } / { **epoxy** } / { **nano particle** } composites (referred to GFR-Nano composites) was fabricated using various nano particles, and their properties in **electromagnetic** shielding were compared. For visual observation of the nano composite materials, SEM(Scanning Electron Microscope) and TEM(**T**ransmission Electron Microscope) were used. For measurement of **electromagnetic** shielding, HP8719ES S-parameter Vector Network Analyser System was used on the frequency range from 8 GHz to 12GHz. Among the nano particles, carbon black and Multi-walled Carbon Nano-tube (MWCNT) revealed outstanding **electromagnetic** shielding. Although silver nano particles (flake and **powder**) were expected to have effective **electromagnetic** shielding due to their excellent electric conductivities, test results showed relatively little shielding effect.

**Descriptors:** Nanostructure; **Electromagnetic** shielding; Nanocomposites; Nanomaterials; **Particulate** composites; Shielding; Polymer matrix composites; Electron microscopes; Absorptivity; **Electrical conductivity**; Stacking; **Sequences**; Vector network analysers; Flakes; Military applications; Visual observation; Industrial engineering; Carbon black; Silver; **Surface** chemistry

**Subj Catg:** D2, Materials Development; 16C, Processing Science

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0001847108 **Petroleum Abstract No:** 892526

**CONDUCTIVITY DEPENDENCE OF SEISMOELECTRIC WAVE PHENOMENA IN  
FLUID-SATURATED SEDIMENTS**

BLOCK, G I; HARRIS, J G

LAWRENCE LIVERMORE NAT LAB; NORTHWESTERN UNIV

JOURNAL OF GEOPHYSICAL RESEARCH v.111, no.B1, 1/4/2006. (ISSN 0148-0227; Citation no.B01304; 12 pp; Over 10 refs)

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ISSN: 0148-0227

Language: ENGLISH

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Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study the **conductivity** dependence of the electrokinetic (EK) effect are described, and outcomes for studies in loose **glass** microspheres and medium-grain sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves and (2) the **electromagnetic** waves produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores; this feature is characteristic of poroelastic (Biot) media but is not predicted by either viscoelastic fluid or solid models. A model of plane wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare **well** to the experimental data for both loose **glass** microspheres and medium-grain sand.

**Primary Descriptor:** SEISMOELECTRIC EFFECT

**Major Descriptors:** BIOT THEORY; ELASTIC WAVE; ELECTRICAL **CONDUCTIVITY**; ELECTRICAL PROPERTY; FLUID FLOW; PHYSICAL PROPERTY; SATURATION; SATURATION (ROCK); SOUND WAVE; THEORY; WAVE

**Minor Descriptors:** CHLORIDE; COMPOUND; DARCY'S LAW; DIELECTRIC PROPERTY; ELECTRIC CHARGE; **ELECTRIC CURRENT**; **ELECTRIC FIELD**; **ELECTRIC POTENTIAL**; **ELECTRICAL EQUIPMENT**; ELECTRICITY; ELECTRODE; ELECTROKINETIC POTENTIAL; ELECTROKINETICS; ELECTROLYTE; **ELECTROMAGNETIC WAVE**; ENGLISH; EQUATION; EXPERIMENT; FLUID FLOW EQUATION; FLUID PROPERTY; FORMATION (**GEOLOGY**); FREQUENCY; **GEOLOGIC MODEL**; GEOPHYSICS; **GLASS**; **GLASS BEAD**; **GRAIN PACKING**; **GRAIN PROPERTY**; **GRAIN SIZE** (**GEOLOGY**); HALIDE; INTERFACE; KINETICS; LABORATORY EQUIPMENT; LABORATORY TESTING; MATHEMATICAL ANALYSIS; MATHEMATICS; MAXWELL EQUATION; MODEL; **PERMEABILITY**; PLANE WAVE; PORE GEOMETRY; POROUS MEDIA; REFLECTION (SEISMIC); RESERVOIR FLUID; SALT; SAND; SEDIMENT (**GEOLOGY**); SEISMIC WAVE PROPAGATION; SODIUM CHLORIDE; TESTING; TIME SERIES; UNCONSOLIDATED FORMATION; WAVE FREQUENCY; WAVE PHENOMENON; WAVE PROPAGATION

**Subject Heading:** GEOPHYSICS

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43/9/7 (Item 2 from file: 987) [Links](#)

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0001674028 **Petroleum Abstract No:** 719446

**HYSTERESIS IN DIELECTRIC PROPERTIES OF FLUID-SATURATED POROUS MEDIA**

BRUINING, J; NGUYEN, B L; SLOB, E C

DELFT UNIV TECHNOL

SPE ASIA PACIFIC IMPR. OIL RECOVERY CONF. [APIORC 99] (Kuala Lumpur, Malaysia, 10/25-26/1999)

PROC. 1999. (SPE-57305; Available on CD-ROM; 11 pp; 10 refs)

1999

**Report Number:** SPE-57305

**Language:** ENGLISH

**Document Type:** MEETING PAPER TEXT; AT

**Record Type:** ABSTRACT

Measurements are presented of the complex dielectric **permittivity** and electric **conductivity** in 3 different porous media, made from unconsolidated acid-purified quartz sand and **glass grains**. To ensure the generality of the results, sand and **glass grains** of different geometry and particle size distribution are used. The measurements are made in the frequency range of 300 kHz to 3 GHz, which covers the operating frequencies of all **electromagnetic** tools. A specially designed capillary pressure cell with a built-in **transmission** line goes through the porous media. The measured capillary pressure curves serve as an indication of the capillary **hysteresis** during the entire drainage and imbibition cycle. From the scattering characteristics of the built-in **transmission** line, the complex dielectric **permittivity** of the porous media is computed as a function of frequency and water saturation.

**Primary Descriptor:** HYSTERESIS

**Major Descriptors:** ABSORPTION; DIELECTRIC PROPERTY; DRAINAGE; ELECTRICAL CONDUCTIVITY; ELECTRICAL PROPERTY; **ELECTROMAGNETIC** WAVE SRCE; IMBIBITION; PHYSICAL PROPERTY; SORPTION; WAVE SOURCE

**Minor Descriptors:** BODY (GEOMETRIC); CABLE; CAPILLARY PRESSURE; CELL (INSTRUMENT); CHART; COAXIAL CABLE; CONTAMINATION; DEFLECTION; DETECTOR; DIFFERENTIAL PRESSURE; DOMAIN; ELECTRIC CABLE; **ELECTRIC** LOGGING; **ELECTROMAGNETIC** FIELD; **ELECTROMAGNETIC** TRANSDUCER; **ELECTROMAGNETISM**; ENGINEERING DRAWING; ENGLISH; ENVIRONMENTAL POLLUTION; FLOW CHART; FREQUENCY; FREQUENCY DOMAIN; GEOMETRY; **GLASS**; **GLASS BEAD**; GRAPH; GRAPHICAL REPRESENTATION; HIGH FREQUENCY; INSTRUMENT; LABORATORY EQUIPMENT; LOW FREQUENCY; MAGNETISM; MATHEMATICAL ANALYSIS; MATHEMATICS; MEASURING; MEETING PAPER TEXT; MINERAL; OIL WETTABILITY; OPTIMIZATION; OXIDE MINERAL; PARTICLE SIZE; POROSITY; POROSITY (ROCK); POROUS MEDIA; PRESSURE; PRESSURE TRANSDUCER; QUARTZ; REFLECTION; **RESISTIVITY**; SAMPLE PREPARATION; SAND; SATURATION; SATURATION DISTRIBUTION; SCATTERING; SEDIMENT (GEOLOGY); SOIL (EARTH); SOIL POLLUTION; SPHERE; **SURFACE** PROPERTY; TEST PROBE; TESTING; TRANSDUCER; **TRANSMISSION** (DATA); **TRANSMITTING**; VALIDATION; WATER POLLUTION; WATER SATURATION; WATER WETTABILITY; WAVE PHENOMENON; WAVE PROPAGATION; **WELL** LOGGING; **WELL** LOGGING & SURVEYING; **WELL** LOGGING EQUIPMENT; WETTABILITY

**Subject Heading:** WELL LOGGING & SURVEYING

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**Conductivity dependence of seismoelectric wave phenomena in fluid-saturated sediments**

Block G.I.; Harris J.G.

**Address:** G.I. Block, Lawrence Livermore National Laboratory, 7000 East Avenue, Livermore, CA 94566 , United States

**Email:** block4@llnl.gov

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**Country Of Publication:** United States.

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**Languages:** English      **Summary Languages:** English

**No. Of References:** 52

Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study the **conductivity** dependence of the electrokinetic (EK) effect are described, and outcomes for studies in loose **glass** microspheres and medium-**grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves and (2) the **electromagnetic** waves produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores; this feature is characteristic of poroelastic (Biot) media but is not predicted by either viscoelastic fluid or solid models. A model of plane wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare well to the experimental data for both loose **glass** microspheres and medium-**grain** sand. Copyright 2006 by the American Geophysical Union.

**Descriptors:**

electrokinesis; electrical **conductivity**; saturated medium; seismic property

**Classification Code And Description:**

72.11 (GEOPHYSICS)

**Record History:**

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**Title:** Seismoelectric Phenomena in Fluid-Saturated Sediments

**Author(s):** Block, G I; Harris, J G

**Corporate Source:** Lawrence Livermore National Laboratory (LLNL), Livermore, CA

**Sponsoring Organization:** USDOE

**Journal:** Journal of Geophysical Research

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**Document Type:** Journal Article

**Language:** English

**Medium/Dimensions:** Size: PDF-file: 42 pages; size: 0.8 Mbytes

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**Abstract:** Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study this electrokinetic (EK) effect are described and outcomes for studies of seismoelectric phenomena in loose **glass** microspheres and medium- **grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves, and (2) the **electromagnetic** wave produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores--this feature is characteristic of poroelastic (Biot) media, but not predicted by either viscoelastic fluid or solid models. A model of plane-wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare **well** to the experimental data for both sand and glass microspheres.

**Descriptors:** ACOUSTICS; **ELECTRIC FIELDS**; ELECTRODYNAMICS; **ELECTROMAGNETIC RADIATION**; ELECTROSTATICS; **GLASS**; MICROSPHERES; REFLECTION; SAND; SEDIMENTS

**Subject Categories:** 58 -- GEOSCIENCES

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INSPEC

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**Title:** Conductivity dependence of seismoelectric wave phenomena in fluid-saturated sediments

**Author** Block, G.I.; Harris, J.G.

**Author Affiliation:** Lawrence Livermore Nat. Lab., Berkeley, CA, USA

**Journal:** Journal of Geophysical Research-Part B-Solid Earth vol.111, no.B1 p. 12 pp.

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**Language:** English **Document Type:** Journal Paper (JP)

**Treatment:** Theoretical (T)

**Abstract:** Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study the **conductivity** dependence of the electrokinetic (EK) effect are described, and outcomes for studies in loose **glass** microspheres and medium-**grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves and (2) the **electromagnetic** waves produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores; this feature is characteristic of poroelastic (Biot) media but is not predicted by either viscoelastic fluid or solid models. A model of plane wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare well to the experimental data for both loose **glass** microspheres and medium-**grain** sand. ( 54 Refs)

**Subfile:** A

**Descriptors:** acoustic waves; fluids; sediments; seismology; terrestrial electricity

**Identifiers:** **conductivity** dependence; seismoelectric wave phenomena; fluid-saturated sediments; acoustic wave; fluid motion; pore space; electrostatic equilibrium; electric double layer; **grain surfaces**; electrokinetic effect; EK; loose **glass** microspheres ; medium-**grain** sand; NaCl concentration; pore fluid; **electric fields**; fluid-sediment interface; sediment pores; poroelastic media; viscoelastic fluid; plane wave reflection model; EK-Biot theory; NaCl  
**Class Codes:** A9125Q (Goelectricity; electromagnetic induction and conductivity); A9160B (Mechanical and acoustic properties of rocks, minerals and soil)

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**Coupled acoustic and electromagnetic disturbances in a granular material saturated by a fluid electrolyte**

**Author:** Block, Gareth Ian

**Degree:** Ph.D.

**Year:** 2004

**Corporate Source/Institution:** University of Illinois at Urbana-Champaign ( 0090 )

**Adviser:** John G. Harris

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**Descriptor Codes:** 0986; 0346; 0415

**ISBN:** 0-496-13737-9

The U.S. Navy has an ongoing need for a reliable model of acoustics in ocean sediments. Viscoelastic fluid and solid descriptions are commonly used, but are often unable to account for the variability exhibited by different types of sediments. Poroelasticity (also known as Biot theory) relates the seabed's observed behavior to sediment microstructure and pore-fluid motion explicitly. Traditional acoustical techniques have had difficulty distinguishing between Biot theory predictions and those based on fluid and solid models. Electrokinetic (EK) phenomena—the coupling of relative fluid motion and **grain surface** chemistry—are generated by wave propagation in electrolyte-saturated sediments. The coupled EK-Biot theory developed by Pride (1994) describes how acoustic waves generate **electromagnetic fields**, and simultaneously, how **electromagnetic fields** affect wave behavior.

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# **COMPARISON OF ELECTROMAGNETIC SHIELDING IN GFR-NANO COMPOSITES**

Jung, Woo-Kyun; Won, Myong-Shik; Ahn, Sung-Hoon Seoul National University of Korea 301B/D 1255-1, San56-1, Shinlim, Kwanak, Seoul, Korea, 151-742

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The research on **electromagnetic** shielding has been advanced for military applications as well as for commercial products. Utilizing the reflective properties and absorptive properties of shielding material, the replied signal measured at the rear **surface**, or at the signal source can be minimized. The shielding effect was obtained from such materials that have high absorptive properties and structural characteristics, for example stacking sequence. In this research { **glass fiber** } / { **epoxy** } / { **nano particle** } composites (referred to GFR-Nano composites) was fabricated using various nano particles, and their properties in **electromagnetic** shielding were compared. For visual observation of the nano composite materials, SEM(Scanning Electron Microscope) and TEM(Transmission Electron Microscope) were used. For measurement of **electromagnetic** shielding, HP8719ES S-parameter Vector Network Analyser System was used on the frequency range from 8 GHz to 12GHz. Among the nano particles, carbon black and Multi-walled Carbon Nano-tube (MWCNT) revealed outstanding **electromagnetic** shielding. Although silver nano particles (flake and **powder**) were expected to have effective **electromagnetic** shielding due to their excellent electric conductivities, test results showed relatively little shielding effect.

**Descriptors:** Nanostructure; **Electromagnetic** shielding; Nanocomposites; Nanomaterials; **Particulate** composites; Shielding; Polymer matrix composites; Electron microscopes; Absorptivity; **Electrical conductivity**; Stacking; **Sequences**; Vector network analysers; Flakes; Military applications; Visual observation; Industrial engineering; Carbon black; Silver; **Surface** chemistry

**Subj Catg:** D2, Materials Development; 16C, Processing Science

N/A JAF 2/16/2007

44/9/4 (Item 1 from file: 987) [Links](#)

TULSA (Petroleum Abs)

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**HYSTERESIS IN DIELECTRIC PROPERTIES OF FLUID-SATURATED POROUS MEDIA**

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DELFT UNIV TECHNOL

SPE ASIA PACIFIC IMPR. OIL RECOVERY CONF. [APIORC 99] (Kuala Lumpur, Malaysia, 10/25-26/1999)

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1999

**Report Number:** SPE-57305

**Language:** ENGLISH

**Document Type:** MEETING PAPER TEXT; AT

**Record Type:** ABSTRACT

Measurements are presented of the complex dielectric **permittivity** and electric **conductivity** in 3 different porous media, made from unconsolidated acid-purified quartz sand and **glass grains**. To ensure the generality of the results, sand and **glass grains** of different geometry and particle size distribution are used. The measurements are made in the frequency range of 300 kHz to 3 GHz, which covers the operating frequencies of all **electromagnetic** tools. A specially designed capillary pressure cell with a built-in **transmission** line goes through the porous media. The measured capillary pressure curves serve as an indication of the capillary **hysteresis** during the entire drainage and imbibition cycle. From the scattering characteristics of the built-in **transmission** line, the complex dielectric **permittivity** of the porous media is computed as a function of frequency and water saturation.

**Primary Descriptor:** HYSTERESIS

**Major Descriptors:** ABSORPTION; DIELECTRIC PROPERTY; DRAINAGE; ELECTRICAL CONDUCTIVITY; ELECTRICAL PROPERTY; ELECTROMAGNETIC WAVE SRCE; IMBIBITION; PHYSICAL PROPERTY; SORPTION; WAVE SOURCE

**Minor Descriptors:** BODY (GEOMETRIC); CABLE; CAPILLARY PRESSURE; CELL (INSTRUMENT); CHART; COAXIAL CABLE; CONTAMINATION; DEFLECTION; DETECTOR; DIFFERENTIAL PRESSURE; DOMAIN; ELECTRIC CABLE; ELECTRIC LOGGING; ELECTROMAGNETIC FIELD; ELECTROMAGNETIC TRANSDUCER; ELECTROMAGNETISM; ENGINEERING DRAWING; ENGLISH; ENVIRONMENTAL POLLUTION; FLOW CHART; FREQUENCY; FREQUENCY DOMAIN; GEOMETRY; GLASS; GLASS BEAD; GRAPH; GRAPHICAL REPRESENTATION; HIGH FREQUENCY; INSTRUMENT; LABORATORY EQUIPMENT; LOW FREQUENCY; MAGNETISM; MATHEMATICAL ANALYSIS; MATHEMATICS; MEASURING; MEETING PAPER TEXT; MINERAL; OIL WETTABILITY; OPTIMIZATION; OXIDE MINERAL; PARTICLE SIZE; POROSITY; POROSITY (ROCK); POROUS MEDIA; PRESSURE; PRESSURE TRANSDUCER; QUARTZ; REFLECTION; RESISTIVITY; SAMPLE PREPARATION; SAND; SATURATION; SATURATION DISTRIBUTION; SCATTERING; SEDIMENT (GEOLOGY); SOIL (EARTH); SOIL POLLUTION; SPHERE; SURFACE PROPERTY; TEST PROBE; TESTING; TRANSDUCER; TRANSMISSION (DATA); TRANSMITTING; VALIDATION; WATER POLLUTION; WATER SATURATION; WATER WETTABILITY; WAVE PHENOMENON; WAVE PROPAGATION; WELL LOGGING; WELL LOGGING & SURVEYING; WELL LOGGING EQUIPMENT; WETTABILITY

**Subject Heading:** WELL LOGGING & SURVEYING

*M/A TAP 2/16/2004*

44/9/5 (Item 1 from file: 103) [Links](#)

Energy SciTec

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**Title:** Seismoelectric Phenomena in Fluid-Saturated Sediments

**Author(s):** Block, G I; Harris, J G

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**Country of Publication:** United States

**Abstract:** Seismoelectric phenomena in sediments arise from acoustic wave-induced fluid motion in the pore space, which perturbs the electrostatic equilibrium of the electric double layer on the **grain surfaces**. Experimental techniques and the apparatus built to study this electrokinetic (EK) effect are described and outcomes for studies of seismoelectric phenomena in loose **glass** microspheres and medium- **grain** sand are presented. By varying the NaCl concentration in the pore fluid, we measured the **conductivity** dependence of two kinds of EK behavior: (1) the **electric fields** generated within the samples by the passage of **transmitted** acoustic waves, and (2) the **electromagnetic** wave produced at the fluid-sediment interface by the incident acoustic wave. Both phenomena are caused by relative fluid motion in the sediment pores--this feature is characteristic of poroelastic (Biot) media, but not predicted by either viscoelastic fluid or solid models. A model of plane-wave reflection from a fluid-sediment interface using EK-Biot theory leads to theoretical predictions that compare **well** to the experimental data for both sand and **glass** microspheres.

**Descriptors:** ACOUSTICS; **ELECTRIC FIELDS**; ELECTRODYNAMICS; **ELECTROMAGNETIC RADIATION**; ELECTROSTATICS; **GLASS**; MICROSPHERES; REFLECTION; SAND; SEDIMENTS

**Subject Categories:** 58 -- GEOSCIENCES

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